DOCUMENT RESUME

ED 366 615 TM 020 986

AUTHOR	Salganik, Laura Hersh; And Others
TITLE	Education in States and Nations: Indicators Comparing U.S. States with the OECD Countries in 1988.
INSTITUTION	Pelavin Associates, Inc., Washington, DC.
SPONS AGENCY	National Center for Education Statistics (ED), Washington, DC.
REPORT NO	NCES-93-237
PUB DATE	Oct 93
NOTE	132p.
PUB TYPE	Statistical Data (110) -- Reports - Evaluative/Feasibility (142)
EDRS PRICE	MF01/PC06 Plus Postage.
DESCRIPTORS	Background; Comparative Analysis; Demography; Educational Attainment; Educational Change; *Educational Finance; Educational Planning; Educational Policy; Elementary School Students; Elementary Secondary Education; Enrollment; Expenditure per Student; Expenditures; *Foreign Countries; Geographic Distribution; Grade 8; Higher Education; Human Geography; *International Studies; Labor Force; Mathematics Achievement; *Outcomes of Education; Participation; Population Distribution; Standards; *State Norms; State Surveys; Tables (Data)
IDENTIFIERS	*Educational Indicators; National Assessment of Educational Progress; OECD CERI International Indicators Project; Organisation for Economic Cooperation; World Future Society

ABSTRACT

This report is based on the first international education indicators produced by the Organization for Economic Co-operation and Development (OECD). The 16 indicators were chosen to take advantage of data available in "Education at a Glance," the most up-to-date set of international educational indicators. Indicators are grouped into categories of: (1) background; (2) participation; (3) outcomes; and (4) finance. In addition, results from the National Assessment of Educational Progress study of mathematics achievement of eighth graders have been statistically linked to results from a similar international study. The presentation of each indicator includes an explanation of what it means, why it is important, and key results from a comparison of countries and states. Comparisons are most often made among "like-size" entities. For each indicator, tables are included for states and countries along with a graph that displays this data together. The indicators are policy-relevant and problem-oriented measures of the state of a system. A commitment to reaching world-class education performance is expressed in the National Education Goals of 1990. These indicators provide information necessary to plan for these goals. Eighteen figures and 32 tables present indicators. An appendix provides technical information about the comparison process and includes standard error tables for indicators. A glossary and technical notes are attached. (SLD)

SCOPE OF INTEREST NOTICE
The ERIC Facility has assigned this document for processing to: TM
In our judgment, this document is also of interest to the Clearinghouses noted to the right. Indexing should reflect their special points of view. SO

ED 366 615

Education in States and Nations:

Indicators Comparing U.S. States With the OECD Countries in 1988

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☑ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality
● Points of view or opinions stated in this document do not necessarily represent official OERI position or policy

TM020986

BEST COPY AVAILABLE

Education in States and Nations:

Indicators Comparing U.S. States With the OECD Countries in 1988

Laura Hersh Salganik
Richard P. Phelps
Leonard Bianchi
David Nohara
Pelavin Associates, Inc.

Thomas M. Smith
National Center for Education Statistics

U.S. Department of Education
Richard W. Riley
Secretary

Office of Educational Research and Improvement
Sharon P. Robinson
Assistant Secretary

National Center for Education Statistics
Emerson J. Elliott
Commissioner

Data Development Division
Jeanne E. Griffith, *Associate Commissioner*

Indicators and Reports Branch
Nabeel Alsalam, *Branch Chief*

National Center for Education Statistics

"The purpose of the Center shall be to collect, and analyze, and disseminate statistics and other data related to education in the United States and in other nations."—Section 406(b) of the General Education Provisions Act, as amended (20 U.S.C. 1221e–1).

October 1993

FOREWORD

Today's shrinking world brings us closer to other nations through improved communications, transportation, and an increasingly global marketplace. Many Americans now agree that our nation's ability to compete in the world economy depends vitally on continuous improvements not only at the workplace, but in our education system as well.

Education in States and Nations reflects two realities — increasing globalization and the centrality of the states in American education. In ***Education in States and Nations***, indicators provide international benchmarks for assessing the condition of education in the U.S. states and in the United States as a whole by comparison with the nations of the Organization for Economic Co-operation and Development (OECD). On four sets of education indicators — background, participation, outcomes, and finance — country-level and state-level measures are arrayed side-by-side in order to facilitate that comparison.

This report is based on the first international education indicators report produced by the OECD, ***Education at a Glance***. The indicators in ***Education in States and Nations*** correspond to as many of the OECD indicators for which state-level data were both applicable and available in order to facilitate the state and country comparisons.

This report is the first effort of its kind. As such, it may provoke discussions over what it includes, what it does not include, and how the data are presented. Thus, this report may raise some questions even as it answers others. That, however, should not diminish its usefulness. On the contrary, it will be to the good if ***Education in States and Nations*** sparks a desire in readers to better understand the education systems of other countries or to improve on this set of indicators in future publications. This publication represents the first step in an evolving process, not the conclusion of a limited study.

Jeanne E. Griffith, Associate Commissioner
Data Development Division

ACKNOWLEDGEMENTS

The authors wish to thank all those who contributed to the production of this report. Layout and graphics were provided by Aleighta Hughes of Pelavin Associates. This report's professional look owes much to her high level of technical knowledge and skill. Also at Pelavin Associates, Dan Sherman, Clayton Best, and Sonya Gross helped to assemble the relevant financial data sets. Joel Sherman reviewed and provided helpful comments on most of the indicators.

Capable programming support was provided by James Corina and Bob Craig of Pinkerton Computer Consultants. Their experience and skill in tabulating NCES data sets contributed to the timeliness and accuracy of this report.

The average and percentile scores presented in *Indicator 9*, Mathematics achievement, were calculated by Charles Lewis and Duanli Yan of the Educational Testing Service (ETS). Nancy A. Mead and Peter Pashley, also of ETS, were instrumental in pulling these data together in time for this report.

From NCES, Thomas D. Snyder was especially helpful in providing data and helpful comments for many indicators. Nabeel Alsalam and Jeanne E. Griffith provided valuable assistance in conceptualizing *Education in States and Nations*. Laurence T. Ogle coordinated the review process. Maureen Treacy helped make publication of *Indicator 9*, Mathematics achievement, a reality. Mary Frase reviewed the manuscript through several drafts and provide invaluable recommendations for improving the report's clarity and accuracy.

We would also like to acknowledge the helpful comments of other NCES reviewers: Susan Ahmed, Statistical Standards and Methodology Division; John Burkett, Data Development Division; William J. Fowler, Elementary and Secondary Education Statistics Division; Kristen Keough, Postsecondary Education Statistics Division; and Gary Phillips, Education Assessment Division. Other offices within the Department of Education that provided comments were: Office for Civil Rights; Office of Education Research and Improvement; and the Management and Budget Office.

Several individuals served as invited external peer reviewers of the draft manuscript and made many insightful contributions. Reviews were submitted within very tight time constraints and at the expense of reviewers many other responsibilities. The peer reviewers were: Eric Hanushek, University of Rochester; Jerry Hottinger, Pennsylvania Department of Education; William L. Padia, California Department of Education; Ramsay Selden, Council of Chief State School Officers; Barbara Turlington and Art Haptman, American Council on Education; and Susan Tyson, Georgia Department of Education.

TABLE OF CONTENTS

Page

Foreword . . . iii

Acknowledgements . . . iv

List of Tables . . . vi

List of Figures . . . viii

Introduction and Overview . . . 1

Background Indicators
- Indicator 1: Population and area . . . 16
- Indicator 2: Youth and population . . . 22
- Indicator 3: GDP/GSP per capita . . . 26
- Indicator 4: Labor force participation . . . 30

Participation Indicators
- Indicator 5: Participation in formal education . . . 36
- Indicator 6: Upper secondary enrollment . . . 40
- Indicator 7: Non-university higher education enrollment . . . 44
- Indicator 8: University enrollment . . . 48

Outcomes Indicators
- Indicator 9: Mathematics achievement . . . 54
- Indicator 10: Higher education completion . . . 58
- Indicator 11: Unemployment and education . . . 62
- Indicator 12: Educational attainment of the population . . . 66

Finance Indicators
- Indicator 13: Current public expenditure per student . . . 72
- Indicator 14: Current public expenditure on education as a percentage of GDP/GSP 76
- Indicator 15: Current public expenditure per student relative to GDP/GSP per capita 80
- Indicator 16: Distribution of current public expenditure on education . . . 84

Supplemental Notes . . . 89

Appendix . . . 103

Glossary . . . 117

Sources of Data . . . 123

Index . . . 129

LIST OF TABLES

Page

Table 1a— Population, area, and population density, by country: 1988 20

Table 1b— Population, area, and population density, by state: 1988 21

Table 2a— Percentage of population aged 2 to 29, by country: 1988 24

Table 2b— Percentage of population aged 2 to 29, by state: 1988 25

Table 3a— GDP per capita (in U.S. dollars), by country: 1988 28

Table 3b— GSP per capita, by state: 1988 29

Table 4a— Labor force participation rate for persons aged 15 to 64, by sex and country: 1988 32

Table 4b— Labor force participation rate for persons aged 15 to 64, by sex and state: 1988 33

Table 5a— Public and private enrollment per 100 persons in population aged 2 to 29, by control of school, enrollment status, and country: 1988 38

Table 5b— Public and private enrollment per 100 persons in population aged 2 to 29, by control of school, enrollment status, and state: 1988 39

Table 6a— Full-time public and private upper secondary enrollment per 100 persons in the enrollment reference group, by degree of comprehensiveness of school system and country: 1988 42

Table 6b— Full-time public and private upper secondary enrollment per 100 persons in the population aged 15 to 17, by state: 1988 43

Table 7a— Public and private non-university higher education enrollment per 100 persons in the enrollment reference group, by enrollment status, sex, and country: 1988 . . 46

Table 7b— Public and private non-university higher education enrollment per 100 persons aged 18 to 19, by enrollment status, sex, and state: 1988 47

Table 8a— Public and private university enrollment per 100 persons in the enrollment reference group, by enrollment status, sex, and country: 1988 50

Table 8b— Public and private university enrollment per 100 persons in the population aged 18 to 24, by enrollment status, sex, and state: 1988 51

Table 9a— Predicted proficiency scores for 13-year-olds in mathematics, by country: 1991 56

Table 9b— Proficiency scores for 8th-grade students in public schools in mathematics, by state: 1992 57

Table 10a— Public and private university graduates per 100 persons at the graduation reference age and degrees, by sex and country: 1988 60

Table 10b— Public and private university graduates per 100 persons aged 22-years-old, by sex and state: 1988 61

Table 11a— Unemployment rates for various levels of educational attainment for 25- to 64-year olds, by sex and country: 1989 64

Table 11b— Unemployment rates for various levels of educational attainment for 25- to 64-year olds, by sex and state: 1989 65

Table 12a— Percentage of the population aged 25 to 64, by highest level of education attained and country: 1989 68

Table 12b— Percentage of the population aged 25 to 64, by highest level of education attained and state: 1989 69

Table 13a— Current public expenditure per student (in U.S. dollars), by level of education and country: 1988 74

Table 13b— Current public expenditure per student, by level of education and state: 1988 . 75

Table 14a— Current public expenditure on education as a percentage of GDP, by level of education and country: 1988 78

Table 14b— Current public expenditure on education as a percentage of GSP, by level of education and state: 1988 79

Table 15a— Current public expenditure per student relative to GDP per capita, by level of education and country: 1988 82

Table 15b— Current public expenditure per student relative to GSP per capita, by level of education and state: 1988 83

Table 16a— Distribution of current public expenditure on education across school levels, by country: 1988 86

Table 16b— Distribution of current public expenditure on education across school levels, by state: 1988 87

LIST OF FIGURES

Page

Figure 1a— Population density, by country and state: 1988 17

Figure 1b— Land area, by country and state: 1988 18

Figure 1c— Population, by country and state: 1988 19

Figure 2— Percentage of population aged 2 to 29, by country and state: 1988 23

Figure 3— GSP/GDP per capita, by country and state: 1988 27

Figure 4— Labor force participation for persons aged 15 to 64, by country and state: 1988 31

Figure 5— Public and private FTE enrollment per 100 persons in population aged 2 to 29, by country and state: 1988 37

Figure 6— Full-time public and private upper secondary enrollment per 100 persons in the enrollment reference group, by country and state: 1988 41

Figure 7— Public and private non-university higher education enrollment per 100 persons in the enrollment reference group, by country and state: 1988 45

Figure 8— Public and private university enrollment per 100 persons in the enrollment reference group, by country and state: 1988 49

Figure 9— Proficiency scores for 13-year-olds in other countries and public 8th-grade students in U.S. states in mathematics: 1991 (other countries) or 1992 (U.S. and states) 55

Figure 10— Public and private university graduates per 100 persons at the graduation reference age, by country and state: 1988 59

Figure 11— Unemployment rate among those who have completed an upper secondary level of education, by country and state: 1988 63

Figure 12— Percentage of the population who have attained various levels of education, by country and state: 1989 67

Figure 13— Current public expenditure per student on preprimary through secondary education, by country and state: 1988 73

Figure 14— Current public expenditure on education as a percentage of GDP/GSP, by country and state: 1988 77

Figure 15— Current public expenditure for preprimary through secondary education per student relative to GDP per capita, by country and state: 1988 81

Figure 16— Percent of current public expenditure for preprimary through secondary education, by country and state: 1988 85

INTRODUCTION AND OVERVIEW

INTRODUCTION AND OVERVIEW

Ten years ago, when ***A Nation at Risk*** highlighted both the state of American education and its essential role in our nation's prosperity, its first piece of evidence was international comparisons of mathematics and science achievement. It appeared then that U.S. students were being increasingly outperformed by students from other countries, including some that educated their students at much lower cost. This report from an independent commission appointed by the Secretary of Education suggested that, at a time when a nation's power and prosperity were more than ever before determined by the collective brain power of its citizenry, the U.S. education system seemed not to be performing as well as it could.[1,2]

A few years later, in 1986, the National Governors' Association issued ***A Time for Results***, a report similar in tone, in the nature of its evidence, and in its recommendations to ***A Nation at Risk***. ***A Time for Results*** asserted even more strongly than ***A Nation at Risk*** that global economic competition meant that the most appropriate benchmarks for education system performance were now global as well. This report by a ***national*** association of ***state*** governors was at once an assertion that education was a national concern, and that it was still primarily a state and local responsibility.[3]

Since publication of ***A Time for Results***, Americans have seen much activity on education policy at the interstices of authority between the separate branches and levels of government. The Federal government and the nation's governors joined their efforts formally at the Charlottesville, Virginia "education summit" in 1989; and the subsequently-formed National Education Goals Panel and National Council on Education Standards and Testing both included members from the Congress, the White House, the U.S. Department of Education, and the ranks of governors and state legislators.[4] Agreement on six National Education Goals followed the Charlottesville summit.

A commitment to reaching world-class education performance levels is explicitly expressed in National Education Goals 4 and 5. Goal 4 declares that U.S. students will be first in the world in science and mathematics achievement by the year 2000. Goal 5 asserts that every adult American will possess the knowledge and skills necessary to compete in a global economy.[5]

By joining efforts with the Federal government, the governors did not intend to share the management of the public schools. However, they did agree that the Federal government had an important role to play in the collection and dissemination of comparative data needed to manage the quality of American education.[6] The U.S. Department of Education's National Center for Education Statistics (NCES) has for many years carried out such duties.[7] Two of its efforts include ***The Condition of Education*** and the National Assessment of Educational Progress (NAEP). The ***Condition*** is an annual compendium of statistical information on American education, including trends over time, international country comparisons, and some comparisons among various groups (by sex, ethnicity, socioeconomic status, and others). The ***Condition*** contains very few state-by-state comparisons, however.

Another NCES responsibility, the NAEP is a congressionally-mandated survey of the academic achievement of American students. Begun in the 1960s, the NAEP has been reporting assessment results state-by-state, on a trial basis, only since 1990. In that year, 37 states, the District of Columbia, and two territories participated in a trial state assessment program in eighth-grade mathematics. In the 1992 fourth-grade reading and mathematics and eighth-grade mathematics trial state assessments, voluntary participation increased to 41 states, the District of Columbia, and 2 territories.

At the same time that U.S. officials began looking outside our borders for education policy lessons and performance benchmarks, officials in other countries were doing likewise. The Organization for Economic Co-operation and Development (OECD), which had for years published indicators on macroeconomics, trade, industry, and agriculture, began an effort in the 1980s to develop and collect social indicators, starting with health care. Turning its attention next to education, the organization launched, in 1987, the Indicators of Education Systems project (INES) under the responsibility of its Center for Educational Research and Innovation (CERI). Several international groups of experts developed conceptual frameworks, agreed on definitions, and executed pilot studies to determine the set of possible indicators that best illustrated the condition of education in the OECD countries. In 1992, the OECD published a set of indicators, employing data from the late 1980s, in ***Education at a Glance*** (EAG).[8] An updated second edition of EAG is scheduled for publication in December 1993, and work on subsequent volumes is already underway.

Education in States and Nations is a logical next step and companion volume to EAG. It not only allows state-to-state and country-to-country comparisons, but state-to-country comparisons as well. For perhaps the first time, states can compare their support for education, the participation of their youth in the education system, or their educational outcomes with those of a number of industrialized countries, including some that may be quite similar in size or wealth. In other words, on a variety of measures, education in U.S. states can now be compared internationally.

The Content of *Education in States and Nations*

Education in States and Nations includes 16 indicators. They were chosen to take advantage of the data available in ***Education at a Glance***, the most up-to-date set of international educational indicators. Indicators from EAG were selected for use in ***Education in States and Nations*** if they were relevant to states and if comparative state-level data on the indicators already existed. The indicators are grouped into four categories: 1) background, 2) participation, 3) outcomes, and 4) finance. The data come from a variety of sources. Most of the data on countries come from the INES project of the OECD. The data on individual states come primarily from the NCES, the Department of Labor's Bureau of Labor Statistics, and the Department of Commerce's Bureau of the Census. In addition, results from the 1992 NAEP study of mathematics achievement of American eighth-graders have been statistically linked to results from a similar study of the mathematics achievement of 13-year-old students in various countries, conducted in 1991. This linkage allows comparisons of academic achievement between states and countries.

The presentation of each indicator includes an explanation of what it measures, why it is important, and key results from a comparison of countries and states. Throughout the book, comparisons are most often made among "like-sized" entities: the United States to the other large and relatively wealthy countries that compose the so-called Group of Seven, or G-7 (Canada, France, Germany, Great Britain, Italy, and Japan); and U.S. states to all the OECD countries, including the smaller and relatively less wealthy ones. Such comparisons can be more meaningful than other comparisons because some common and influential factors, such as state size and wealth, are held relatively constant.

In addition to the explanations and key results, the presentation of each indicator includes separate tables for states and countries and a graph that displays states and countries together. The graphs are, in most cases, simple bar graphs with the states and countries listed in order of highest value to lowest. This type of graph highlights the distributional aspects of the data — where countries and states stand in relation to one another and the magnitude of the differences between them. Where appropriate, notes on interpretation describe special circumstances affecting an indicator that warrant particular consideration in making comparisons. Data sources are listed at the bottom of each table and graph. Because some of the terms used in this report may not be familiar to all readers, a glossary is included in the back. Finally, appendices include supplemental data and technical information on how the indicators were developed.

Not all statistics are indicators. Indicators are policy-relevant and problem-oriented measures of the state of a system, such as the education system of a country or state. They are carefully designed to allow comparisons over time, across countries or states, between groups, between sectors and levels of education, and so forth. For this reason, the same data may be used to construct several indicators. For example, *Indicator 3*, gross product per capita, provides a measure of a country's or of a state's wealth — the resources it has available to spend on education and all other activities. *Indicator 14*, current public expenditure on education as a percentage of gross product, also uses data on public education expenditure to measure how much countries or states are willing to spend on education (and not on other activities), given how much they have available to spend. If a poorer country spends as much on education as a richer country, it indicates a desire to forego or reduce other activities that the richer country may not ask itself to forego or reduce.

In the remainder of the overview, we highlight some of the more important concepts and results from each of the four sections of the book.

Section 1: Background

Understanding the context in which indicators exist is important to proper interpretation of indicators. Each indicator in this book, while measuring one particular aspect of education, is affected by a host of other factors, some not directly connected to education. The first group of indicators in this book represent some of these other factors that make up the context in which education takes place. Indicators in this group are: 1) land area, population, and population density, 2) the proportion of youth in the population, 3) country or state gross product. and 4) labor force participation. A complete comparative understanding of education would require a consideration of still more factors not represented here, such as: differences in the levels of development of education systems, national and state education priorities and strategies, and cultural differences. Inclusion of these factors, however, is beyond the scope of this first edition.

How closely do the states resemble the OECD nations demographically and economically? In general, the OECD nations are larger and more populous. However, the states tend to be wealthier (as measured by gross product per capita) and have larger proportions of youth. In labor force participation, the states are more evenly distributed along the range of the OECD nations. For each indicator, one can find individual states closely resembling OECD countries. For example:

- California had a population just slightly larger than Canada's (Indicator 1) and almost the same proportion of youth in its population (Indicator 2).
- Texas's labor force participation (Indicator 4) was quite similar to that of the United Kingdom.
- Colorado's population, land area, population density, and proportion of youth in the population (Indicators 1 and 2) were similar to those of New Zealand.
- Montana and North Dakota had gross products per capita slightly above the per capita gross product of Japan (Indicator 3).

Section 2: Participation

This section contains measures of participation in the education system at different educational levels or age ranges. Indicators include: 1) participation in formal education among people in the 2-29 age range, 2) enrollment in upper secondary education, 3) enrollment in non-university higher education, and 4) enrollment in university education. Where possible, data are subdivided by part-time and full-time and by male and female enrollment.

How does participation in education change as people move from childhood to adulthood? Enrollment ratios are measured by the number of students enrolled in a particular level of education per 100 persons in the enrollment reference group, the population in the age range typical of those enrolled at that level. For most countries and states, the overall enrollment ratio at all levels of education for the population in the 2-29 age range was between 50 and 60 (Indicator 5). In the 50 U.S. states and the countries of the OECD, participation in primary and lower secondary education has become almost universal, and in most cases is legally mandated. It is in the latter years of secondary school that enrollment ratios begin to vary substantially. In some countries, upper secondary education is not compulsory, in others it may not be the path leading to particular vocational choices. In five OECD nations, upper secondary enrollment ratios fall below 75, yet three others, Denmark, West Germany, and Finland, had enough people outside the enrollment reference group receiving upper secondary training to indicate that their ratios were above 100. Enrollment ratios among the states ranged from 76 in Georgia to above 105 in Iowa (Indicator 6).

Enrollment ratios were considerably lower for higher education (Indicators 7 and 8). There was also considerable variation among the countries and states, with higher education enrollment ratios in the U.S. much higher than in other OECD countries, except Canada. In some countries, higher education is highly career-oriented and admission is often quite selective. In the U.S. states, higher education is more general and is available to almost any high school graduate. Many American students enter higher education without focusing on a particular career and continue from secondary to higher education facing relatively little competition for the chance to study at the higher education level. Students in many of the other OECD countries, however, make career choices earlier and are more likely to enter higher education with a definite purpose after having fulfilled certain common requirements.

- There was a wide range of non-university higher education enrollment ratios in the OECD countries, ranging from under 2 per hundred to over 40 per hundred in the United States and Canada at the non-university higher education level.

- Most U.S. states, Canada, and Australia have well-developed systems of non-university higher education that facilitate part-time study. In other countries, opportunities in general are scarce for part-time and non-university higher education.

- Even among the states, there were some extremely low enrollment ratios, (e.g., below 10 in Louisiana and South Dakota), and some extremely high ones (e.g., above 80 in Arizona and California).

- Canada and the United States also had very high university enrollment ratios, but Austria's ratio was higher than that of the United States, and Finland's and Spain's were also high.

- In both the OECD countries and the U.S. states, the highest university enrollment ratios were considerably lower than the highest non-university higher education enrollment ratios.

- No states had university enrollment ratios below 10.

Are women pursuing higher education to the same degree as men? In most of the OECD countries, women had higher ratios of non-university higher education enrollment than men, but lower enrollment ratios at the university level. The most striking example is Japan, where non-university enrollment ratios for women were over 20 persons per hundred higher than for men (37.8 persons per hundred compared to 15.4 persons per hundred), but over 10 persons per hundred lower at the university level (7.0 persons per hundred compared to 18.9 persons per hundred). Other countries where this relationship held true were Belgium, Denmark, and West Germany. However, in most cases, there was much less of a gap in enrollment ratios at the university level than at the non-university level. One reason for higher ratios of female enrollment in non-univesity higher education is that, in some countries, higher education programs in traditionally female-dominated occupations, such as teaching and nursing, are classified as non-university. In the U.S., thirty-four states had female enrollment ratios higher than male enrollment ratios at both the non-university and university levels.

Section 3: Outcomes

There are many ways to measure educational outcomes. One method tests a group's academic knowledge and skills. Another counts the number of people who complete programs of study. A third measures long-term impacts by calculating employment rates and salary levels of graduates. Indicators of these three types are included here. They are: 1) performance of 13-year-olds on tests of mathematics achievement, 2) higher education attainment, 3) unemployment rates for different levels of education attainment, and 4) educational attainment of the population.

How well educated are the citizens of the states and the OECD countries? Of all the OECD countries, for the population 25 to 64 years of age, the United States had by far the highest proportions of secondary-school and university graduates (Indicator 12). Although there was some variation among them, all U.S. states had higher levels of educational attainment than most of the OECD countries. Included in the age range 25 to 64, however, are many people who grew up in an era when educational opportunities in their countries, particularly for higher education, were less available than they are today. While the United States as a whole, and most of its states, had larger ratios of university graduates than other OECD nations, Canada, Japan, Norway, Switzerland, and the United Kingdom also had large ratios of university graduates.

How well do American students compare to students of other nations in mathematics achievement? To compare the performance of students in states and nations on mathematics performance, an experimental indicator was developed. The mathematics proficiency scores of participants in the Second International Assessment of Educational Progress (IAEP) were mapped to a scale used to report scores of U.S. students in the National Assessment of Educational Progress (NAEP). This cross-linking allows comparisons of the average and percentile scores of 13-year-old students in selected industrialized countries (not all of them OECD members) to 8th graders from public schools in selected U.S. states (Indicator 9). Test scores can range from 0 to 500.

- Among the seven largest countries (who assessed virtually all age-eligible children) the average proficiency score of 13-year-olds ranged from 262 in the United States to 285 in Taiwan. The average proficiency score was 273 in France and 270 in Canada.

- The range in average mathematics proficiency across states was similar to the range across countries. Average proficiency scores for public 8th grade students in 1992 ranged from 246 in Mississippi to over 280 in Iowa, North Dakota, and Minnesota. Average scores for 13-year-olds students in 1991 ranged from 246 in Jordan to over 280 in Taiwan and Korea.

- Over twenty-five percent of 13-year-olds in Taiwan and Korea scored above 300 in 1991, while about 10 percent of students of the same age scored above that level in the United States. However, in 10 states 25 percent or more of U.S. 8th grade public school students (who are generally older than 13 years) scored above this level in 1992.

To help understand what these differences mean, it is useful to consider another type of comparison: differences within the United States between the mathematics proficiency of better and poorer performers of the same grade level. The 10th percentile of mathematics proficiency among public 8th grade students in Mississippi was 201 and the 90th percentile was 291, a difference of 90 points which is more than twice the 39 point difference between the average Taiwanese 13-year-old and Mississippi 8th grader. This suggests that variation among students within countries is far larger than variation between countries.

Section 4: Finance

This section includes the following indicators of education finance: 1) current public education expenditure per student; 2) current public education expenditure as a percentage of gross domestic product (GDP) or gross state product (GSP); 3) per-student public education expenditure relative to GDP/GSP per capita; and 4) the distribution of public education expenditure between education levels. Throughout this section, the focus is on expenditure from public sources, rather than on total investment in education, which would include money from private sources. In some cases, expenditure from private sources amounts to a substantial portion of total educational expenditure. However, financial data on private education are not available from some countries.[9]

Which countries and states provide the strongest financial support to education? Financial support for education can be viewed from several different angles, each of which focuses on certain factors and not on others. For example, total expenditure on education is useful for determining who spends the largest sum of money on education, but may be misleading when comparing small countries or states to larger ones. A small country can spend less in the aggregate but may spend more *per-student*. Likewise, a poorer country may spend as much per student as a richer country, in which case some would say it is making a greater effort to educate its citizens. However, that would not be apparent by simply looking at aggregate spending or per-student spending.

Because there is no universally superior measure of public financial support for education, several indicators are presented here. The first, current public expenditure per student (Indicator 13), presents the amount of public financial support for one student's education in each country or state.

- For the preprimary through secondary grades, Switzerland had the highest level of per-student expenditure among the OECD countries and Alaska, Connecticut, New Jersey, and New York had the highest levels among the states.

- The United States spent more per student at the preprimary through secondary level than any of the other G-7 countries.

An advantage of using per-student expenditure as an indicator of a nation or state's financial effort to support education is that it takes into account the size of the student population. On the other hand, one disadvantage is that much of the variation between states and countries may in fact be caused by the relative wealth of that nation or state. The second finance indicator, current public education expenditure as a percentage of GDP/GSP (Indicator 14), attempts to show what states and nations spend on education in terms of the economic resources available to them. On this measure:

- Denmark had the highest level of education expenditure as a percentage of GDP, Japan the lowest.

- Only one G-7 country, Canada, had a higher level of current public expenditure as a percentage of GDP than did the United States. France's level was the same as that of the United States.

- The range of values for states and countries was quite similar. Montana, North Dakota, Wyoming, Denmark, Finland, and Norway had the highest levels of educational expenditure as a percentage of GDP/GSP (6.0 percent or higher). The lowest levels were found in Spain, Nevada, and Japan (3.5 percent or less).

The second finance indicator does provide a measure of a nation or state's spending on education in relation to its available resources, but it is also highly influenced by the size of the student population. All other factors being equal, a country or state with a small student population is likely to spend a smaller portion of its GDP/GSP on education than a country with a large student population. Thus, the third finance indicator, current public education expenditure as a percentage of GDP/GSP (Indicator 15), provides a measure of fiscal effort to support education that takes into account both a country or state's available financial resources and the size of its student population. It is calculated by dividing the first finance indicator, expenditure per student, by a nation or state's per-capita GDP/GSP.

On this measure, some states and countries with higher per-student expenditure (Indicator 15) appeared to be not so high when their available resources were taken into account.

- For example, Alaska, Connecticut, and New Jersey, the three states with the highest per-student expenditure, were not as high in terms of ratios of per-student expenditure to per-capita GSP. States with the highest ratios were Rhode Island, Vermont, Oregon, and Montana.

- On the other hand, the OECD countries with the highest per-student expenditure, Switzerland, Luxembourg, and Sweden, remained among the highest ranking OECD countries even when available resources were taken into consideration.

- The standing of the G-7 nations in relation to one another changed little.

- However, Canada's current per-student expenditure relative to its GDP at the preprimary through secondary level (19.7) was higher than that of the United States (19.6) even though its per-student expenditure at that level was lower ($3,508 compared to $3,843).

Do states and countries differ in the relative proportion of expenditure devoted to different levels of education? Many factors affect this "balance," including the relative size of student populations and systemwide education goals and strategies. For example, some countries or states may choose to invest heavily in higher education in order to increase the number of professionals and managers, while others may feel a more pressing need to focus on basic education for the larger populace by providing more primary and secondary schools.

Regarding the balance of expenditure between levels of education (Indicator 16), the United States' expenditure on the preprimary through secondary level as a percentage of all current public education expenditure lay in the middle of the range for OECD nations, but high among the G-7 nations. Of the G-7 nations, only Japan devoted a larger share of current public expenditure to this level. The OECD countries spending the highest percentage of current expenditure at the preprimary through secondary level were Luxembourg, Spain, and Sweden. New Hampshire and New Jersey spent almost as much. Australia, Canada, Denmark, the Netherlands, New Mexico, North Dakota, Utah, Alabama, North Carolina, and Hawaii had relatively high levels of spending at the higher education level.

Other related NCES projects

The first edition of ***Education in States and Nations*** is just one part of an overall NCES effort to improve our ability to compare the education systems of different states and countries. NCES is acting as the representative for the United States in the OECD's INES project mentioned earlier. In connection with the INES project, NCES has commissioned a project to improve the comparability of education finance data across countries. NCES also plans to publish an international indicators report in 1994, which will complement information presented in ***Education at a Glance*** with contextual information on each country's education system. These projects and others comprise a major ongoing effort to not only compare education systems across states and countries, but to improve the comparability of data and to deepen our understanding of the context of the data.

---

[1] Many observers attribute the origins of the current wave of education reform in the United States to the 1983 publication of ***A Nation at Risk***. Other observers trace the origins to the late 1970s, when the first of many states passed student minimum competency requirements. The National Commission on Excellence in Education, which wrote ***A Nation at Risk***, and many others, however, would distinguish the "minimum competency movement" as an earlier, separate, and failed effort to reform education (see, for example, pages 19-21 of ***A Nation at Risk***).

[2] The explicit mission of the commission that wrote ***A Nation at Risk*** was to study "the quality of learning and teaching in our nation's schools." Since then, education reformers have often employed the language and methods of the historically parallel quality management movement. *Indicators* are needed in order to *monitor processes* and *measure progress* toward goals. *Outcome measures* are as important as *input measures*. *Goals and standards* should be universally accepted by stakeholders, clear enough to serve as a common focus, measurable, and challenging. Standards, or *benchmarks*, from outside one's own organization serve to ground plans in a reality not defined by vested interests.

[3] Altogether, over ninety percent of funding for American public schools is generated at the state and local levels, with the states, on average, now outspending the local districts by a small margin. There is, however, considerable variation among the states in their state-level support for education.

[4] The National Education Goals panel was not originally formed under a Congressional mandate, but both the House and Senate are currently considering proposals for education reform which include authority for the panel. The National Council on Education Standards and Testing (NCEST) was authorized by the Education Standards Act of 1991 (PL 102-62); the same Act determined that the Council would cease to exist within 90 days of December 31, 1991.

[5] The other National Education Goals are: 1) All children will start school ready to learn; 2) The high school graduation rate will increase to at least 90 percent; 3) Students will demonstrate subject area competency at grades 4, 8, and 12 and be prepared for good citizenship, further

learning, and productive employment; and 6) Every school will be free of drugs and violence and offer a safe, disciplined environment conducive to learning.

[6] Beginning in 1984, and for the next several years, the Department of Education published State Education Performance Charts, or "Wall Charts." Described as a collection of "education indicators," the Charts compared states in areas such as student achievement and education finance. They used data that was readily available, such as Scholastic Aptitude Test (SAT) and American College Test (ACT) scores by state as measures of average statewide student achievement. Although the charts were criticized for using measures that some considered to be inappropriate to judge states' performance, they did seem to increase the demand for more or better indicators.

[7] The National Education Goals Panel is also collecting, organizing, and developing education indicators that particularly pertain to the six Goals. Many of their indicators are published in their annual ***Goals Report***. Other organizations making similar national efforts include the Council of Chief State School Officers and the Education Commission of the States.

[8] The nations of the OECD include Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States. Because the countries did not participate in the OECD's Indicators of Education Systems (INES) project, data on Greece and Iceland are not included in this report.

[9] See supplemental note on private higher education expenditure in Japan and the United States on page 98.

Indicators

BEST COPY AVAILABLE

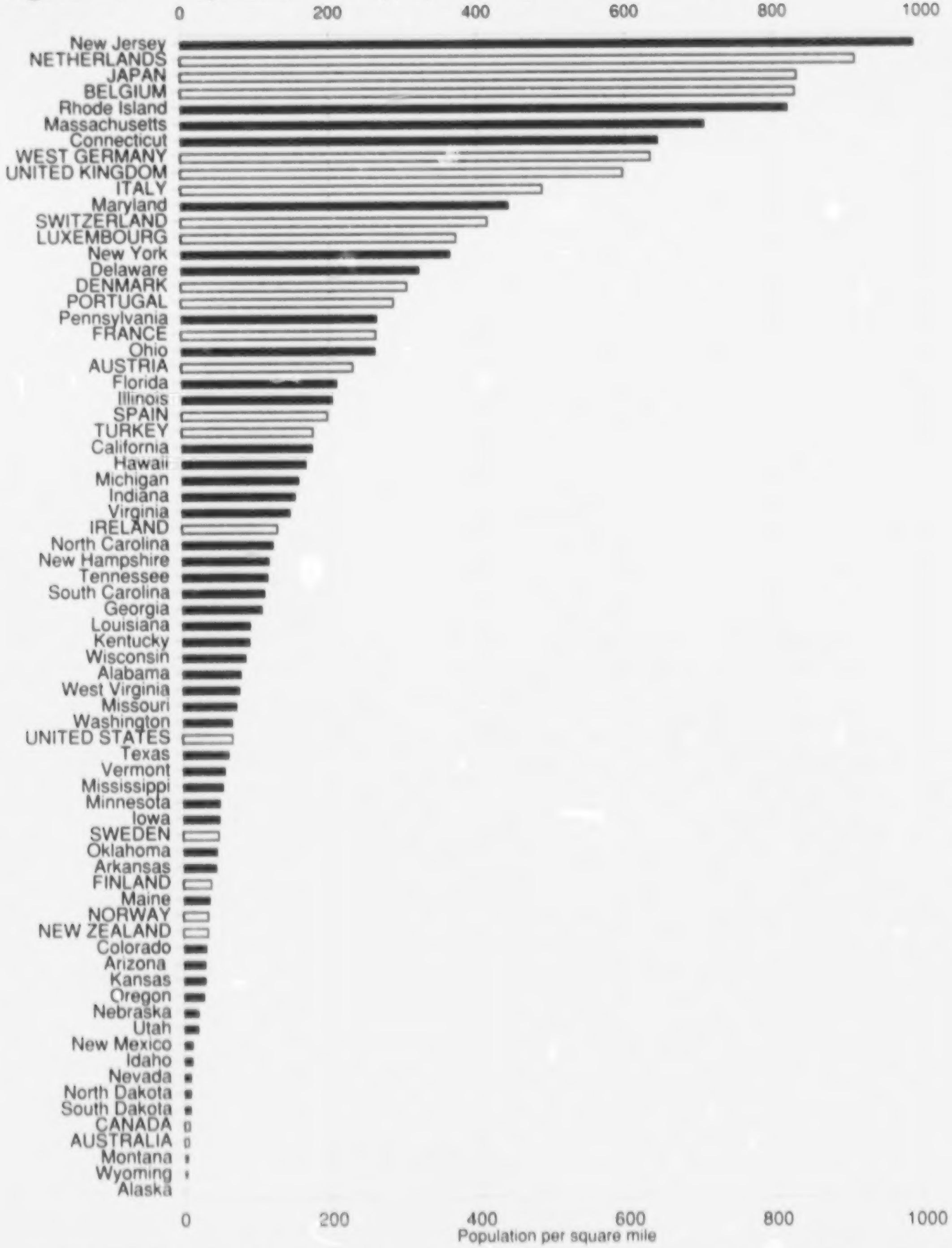
BACKGROUND INDICATORS

Indicator 1: Population and area

A country or state's population and land area influence both the organizational structure and the infrastructure of its education system. Countries or states with large populations tend to have large numbers of school-age children and face a greater demand for educational services. Countries or states with large land areas face greater challenges in providing educational services since they must spread them over a wider geographical area. High population densities may make it more efficient to support a wider range of specialized education and training opportunities. Each of these factors may influence the degree to which an education system is centralized and its ability to provide a wide range of services, but may only become critical in cases where a population, area, or density is either extremely large or extremely small. Otherwise, factors such as culture, history, and economics may have a stronger influence in determining the structure of an education system.

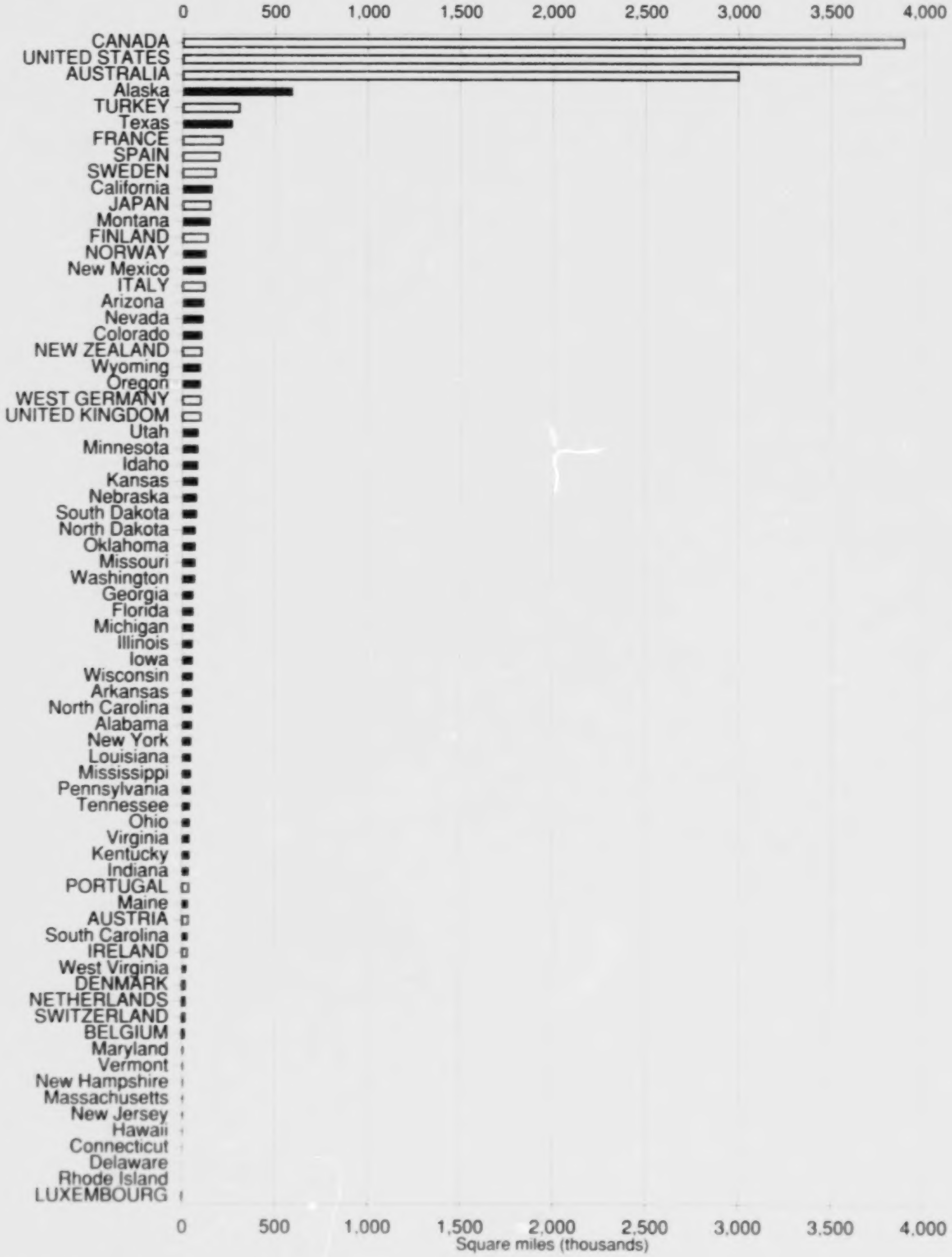
- **Three OECD countries, the United States, Canada, and Australia, have extremely large areas. Of the remaining countries, none have an area as great as one tenth the area of the United States.**
- **The United States was by far the most populous OECD country in 1988, with a population over twice as large as that of the country with the next largest population, Japan.**
- **While no state has an area near the size of one of the three largest OECD countries, Alaska, Texas, and California each have land areas greater than at least 15 of the 21 OECD nations included here.**
- **California was the most populous state in 1988, with 10 million more persons than New York. Other states with populations greater than 10 million included New York, Texas, Florida, Pennsylvania, Illinois, and Ohio. Nine states had populations of less than 1 million.**
- **The range of population densities across the states paralleled the range across the OECD countries. At the low end, Alaska, Wyoming, Montana, Australia, and Canada all had population densities lower than seven persons per square mile. At the high end, New Jersey, Rhode Island, the Netherlands, Belgium, and Japan all had population densities higher than 800 persons per square mile.**

Figure 1a: **Population density, by country and state: 1988**



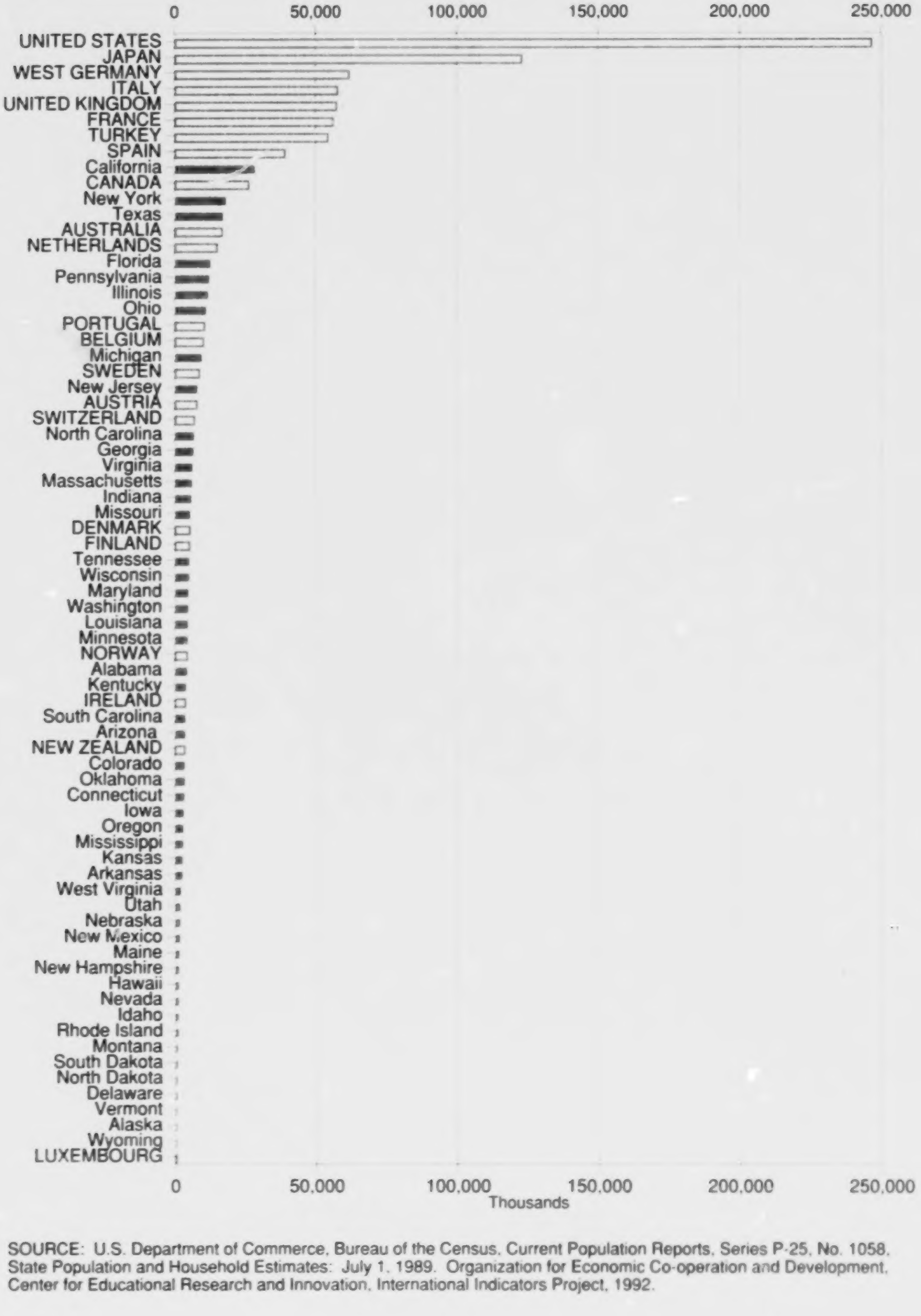
SOURCE: U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Series P-25, No. 1058, State Population and Household Estimates: July 1, 1989. *Webster's Concise World Atlas and Almanac*, 1989. Organization for Economic Co-operation and Development, Center for Educational Research and Innovation, International Indicators Project, 1992.

Figure 1b: Land area, by country and state: 1988



SOURCE: *Webster's Concise World Atlas and Almanac*, 1989.

Figure 1c: **Population, by country and state: 1988**



SOURCE: U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Series P-25, No. 1058, State Population and Household Estimates: July 1, 1989. Organization for Economic Co-operation and Development, Center for Educational Research and Innovation, International Indicators Project, 1992.

Table 1a: Population, area, and population density, by country: 1988

OECD country	Total population (thousands)	Area (square miles)	Population density (persons per square mile)
Australia	16,538	2,997,871	6
Austria	7,595	32,703	232
Belgium	9,879	11,903	830
Canada	25,939	3,890,694	7
Denmark	5,130	16,799	305
Finland	4,946	131,877	38
France	55,884	212,159	263
Ireland	3,538	27,410	129
Italy	57,441	117,491	489
Japan	122,600	147,271	832
Luxembourg	375	1,009	372
Netherlands	14,760	16,204	911
New Zealand	3,326	100,883	33
Norway	4,209	126,329	33
Portugal	10,305	35,874	287
Spain	38,809	196,865	197
Sweden	8,436	175,482	48
Switzerland	6,672	16,104	414
Turkey	53,970	303,986	178
United Kingdom	57,065	95,500	598
United States	246,300	3,655,319	67
West Germany	61,451	96,797	635

SOURCE: Organization for Economic Co-operation and Development, Center for Educational Research and Innovation, International Indicators Project, 1992.

Table 1b: Population, area, and population density, by state: 1988

State	Total population (thousands)	Area (square miles)	Population density (persons per square mile)
Alabama	4,127	51,705	80
Alaska	513	591,004	1
Arizona	3,466	114,000	30
Arkansas	2,422	53,187	46
California	28,168	158,706	177
Colorado	3,290	104,091	32
Connecticut	3,241	5,018	646
Delaware	660	2,045	323
District of Columbia	620	69	8,986
Florida	12,377	58,664	211
Georgia	6,401	58,910	109
Hawaii	1,093	6,471	169
Idaho	999	83,564	12
Illinois	11,544	56,345	205
Indiana	5,575	36,185	154
Iowa	2,834	56,275	50
Kansas	2,487	82,277	30
Kentucky	3,721	40,410	92
Louisiana	4,420	47,752	93
Maine	1,206	33,265	36
Maryland	4,644	10,460	444
Massachusetts	5,871	8,284	709
Michigan	9,300	58,527	159
Minnesota	4,306	84,402	51
Mississippi	2,627	47,689	55
Missouri	5,139	69,697	74
Montana	804	147,046	5
Nebraska	1,601	77,355	21
Nevada	1,060	110,561	10
New Hampshire	1,097	9,279	118
New Jersey	7,720	7,787	991
New Mexico	1,510	121,593	12
New York	17,898	49,108	364
North Carolina	6,526	52,669	124
North Dakota	663	70,702	9
Ohio	10,872	41,330	263
Oklahoma	3,263	69,956	47
Oregon	2,741	97,073	28
Pennsylvania	12,027	45,308	265
Rhode Island	995	1,212	821
South Carolina	3,493	31,113	112
South Dakota	715	77,116	9
Tennessee	4,919	42,144	117
Texas	16,780	266,807	63
Utah	1,691	84,899	20
Vermont	556	9,614	58
Virginia	5,996	40,767	147
Washington	4,619	68,139	68
West Virginia	1,884	24,232	78
Wisconsin	4,858	56,153	87
Wyoming	471	97,809	5

NOTE: See supplemental note to Indicator 1 on page 90 for details on inclusion of data for the District of Columbia.

SOURCE: U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Series P-25, No. 1058, State Population and Household Estimates: July 1, 1989. *Webster's Concise World Atlas and Almanac*, 1989.

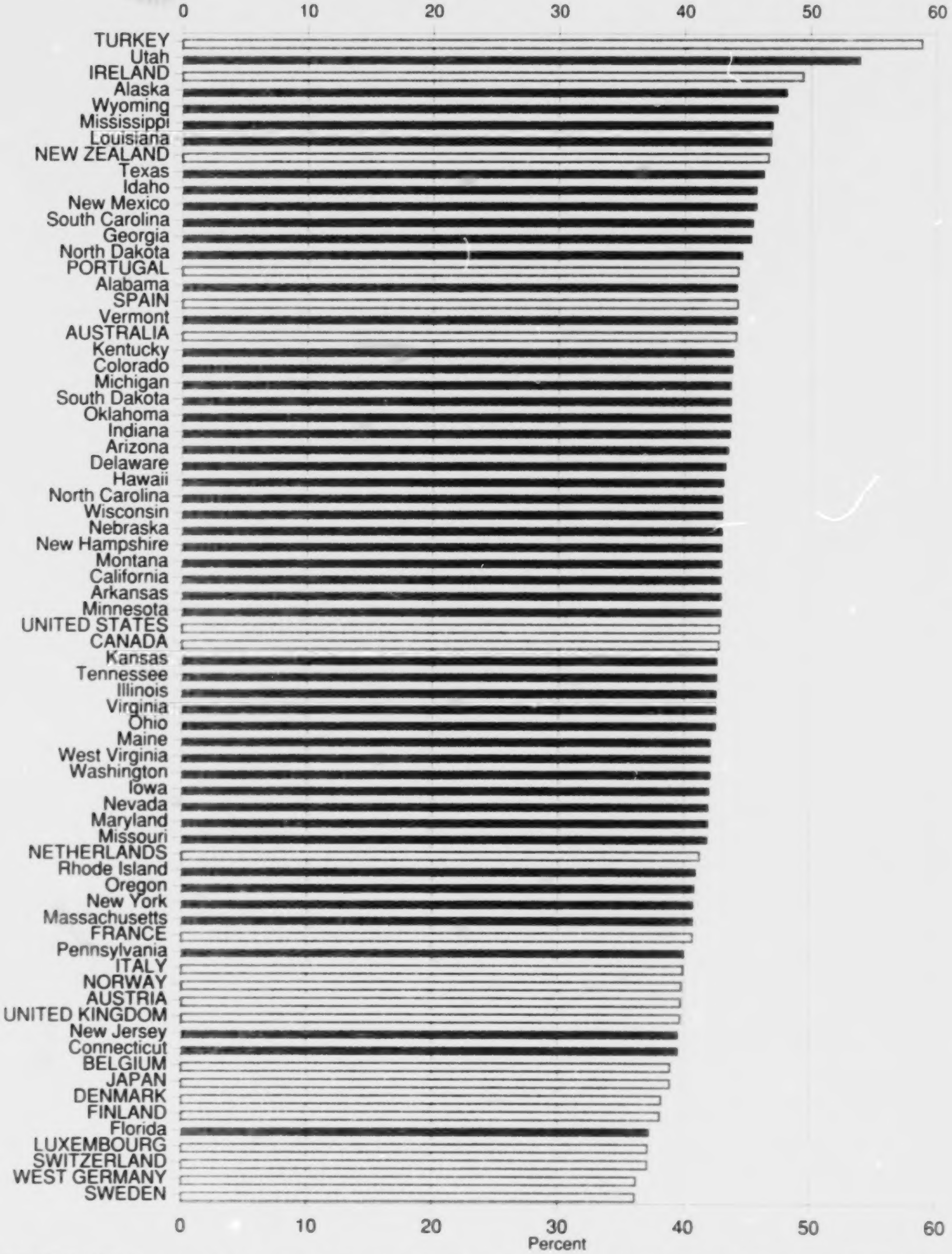
Indicator 2: Youth and population

The percentage of persons aged 2 to 29 years is an indicator of the potential demand for school enrollments in a country or state. As such, the percentage also is an indicator of the potential demand drawing on national or state budgets for educational funding. Countries or states with higher proportions of youth tend to have a greater demand for educational funding. Changes in the proportion over time parallel trends in this demand and in the size of future workforces. The percentage is not an exact measure of the proportion of students in a population, however, since some persons within the age range of 2 to 29 years will not be students and some students will come from outside this age range.

- **The United States had a larger proportion of young people in its population than did most OECD countries in 1988. Young people between the ages of 2 and 29 years comprised about 43 percent of the population in the United States and in Canada, more than 6 percentage points more than in Germany, one of the countries with the lowest percentage.**

- **U.S. states tended to have higher proportions of young people in their populations than did the OECD countries. In 46 of the U.S. states, youth aged 2 to 29 years comprised more than 40 percent of the population. This was true in only 10 of the 22 OECD countries.**

Figure 2: Percentage of population aged 2 to 29, by country and state: 1988



SOURCE: U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Series P-25, No. 1058, State Population and Household Estimates: July 1, 1989. Organization for Economic Co-operation and Development, Center for Educational Research and Innovation, International Indicators Project, 1992.

Table 2a: Percentage of population aged 2 to 29, by country: 1988

OECD country	Total
Australia	44.1
Austria	39.7
Belgium	38.9
Canada	42.7
Denmark	38.2
Finland	38.1
France	40.7
Ireland	49.3
Italy	39.9
Japan	38.9
Luxembourg	37.1
Netherlands	41.2
New Zealand	46.6
Norway	39.8
Portugal	44.2
Spain	44.2
Sweden	36.1
Switzerland	37.1
Turkey	58.8
United Kingdom	39.7
United States	42.8
West Germany	36.2

SOURCE: Organization for Economic Co-operation and Development, Center for Educational Research and Innovation, International Indicators Project, 1992.

Table 2b: Percentage of population aged 2 to 29, by state: 1988

State	Total
Alabama	44.2
Alaska	48.1
Arizona	43.5
Arkansas	42.9
California	42.9
Colorado	43.8
Connecticut	39.6
Delaware	43.3
District of Columbia	40.4
Florida	37.3
Georgia	45.3
Hawaii	43.1
Idaho	45.7
Illinois	42.6
Indiana	43.6
Iowa	42.0
Kansas	42.6
Kentucky	43.9
Louisiana	46.9
Maine	42.1
Maryland	41.9
Massachusetts	40.7
Michigan	43.7
Minnesota	42.9
Mississippi	46.9
Missouri	41.9
Montana	43.0
Nebraska	43.0
Nevada	41.9
New Hampshire	43.0
New Jersey	39.6
New Mexico	45.7
New York	40.8
North Carolina	43.0
North Dakota	44.6
Ohio	42.5
Oklahoma	43.7
Oregon	40.8
Pennsylvania	40.0
Rhode Island	41.0
South Carolina	45.4
South Dakota	43.7
Tennessee	42.6
Texas	46.3
Utah	53.9
Vermont	44.2
Virginia	42.5
Washington	42.1
West Virginia	42.1
Wisconsin	43.0
Wyoming	47.3

SOURCE: U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Series P-25, No. 1058, State and Household Estimates: July 1, 1989.

Indicator 3: GDP/GSP per capita

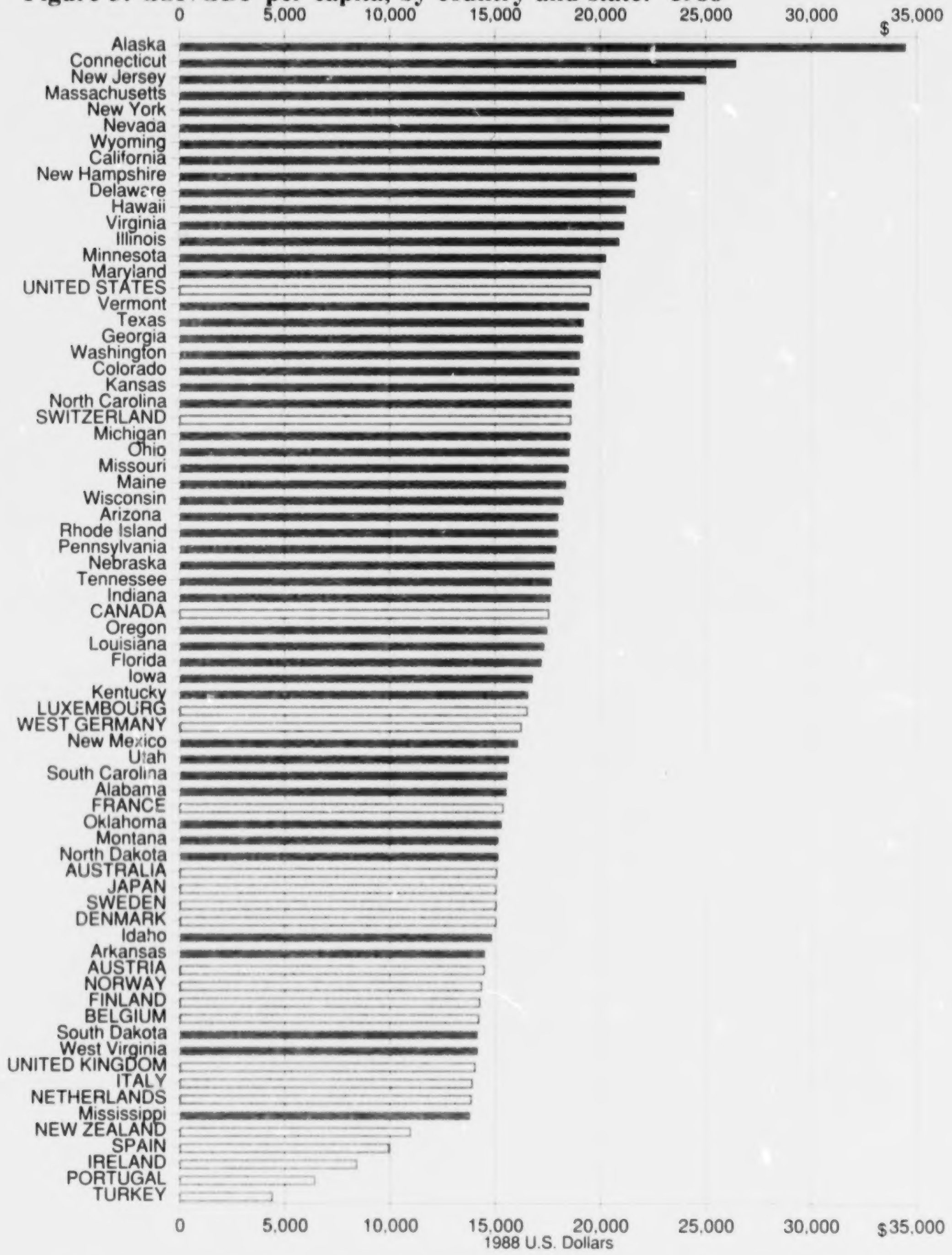
Gross domestic product (GDP) is an aggregate measure of the value of goods and services produced in a country. Gross state product (GSP) is the analogous measure for U.S. states. Gross product is a measure of a country or state's productive capacity or wealth. Countries or states with equal GDP/GSPs can have very different numbers of inhabitants, however. GDP/GSP *per capita* provides a measure of the resources available to a country or state relative to the size of its population. Countries or states with large gross products per capita generally are better able to provide educational services for their residents.

- **Among the OECD nations, the United States had the highest GDP per capita in 1988, $19,525 — about $2,000 more than Canada, $3,000 more than West Germany, and at least $4,000 more than France or any of the other G-7 countries.**

- **The U.S. states generally had higher gross products per capita than the OECD nations. Twelve of the 22 OECD nations had GDPs per capita below $15,000, whereas only five states — Mississippi, West Virginia, South Dakota, Arkansas, and Idaho — had per capita GSPs below that level.**

- **Three U.S. states — Alaska, Connecticut, and New Jersey — had GSPs per capita of $25,000 or above. None of the OECD nations had GDPs per capita higher than $20,000.**

Figure 3: GSP/GDP per capita, by country and state: 1988



SOURCE: U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Series P-25, No. 1058, State Population and Household Estimates: July 1, 1989; *Statistical Abstract of the United States 1992*, Table 684. Organization for Economic Co-operation and Development, Center for Educational Research and Innovation, International Indicators Project, 1992.

Table 3a: GDP per capita (in U.S. dollars), by country: 1988

OECD country	GDP per capita
Australia	$15,050
Austria	14,466
Belgium	14,192
Canada	17,526
Denmark	15,015
Finland	14,244
France	15,348
Ireland	8,393
Italy	13,873
Japan	15,023
Luxembourg	16,498
Netherlands	13,835
New Zealand	10,939
Norway	14,327
Portugal	6,399
Spain	9,911
Sweden	15,018
Switzerland	18,575
Turkey	4,375
United Kingdom	14,020
United States	19,525
West Germany	16,214

NOTE: All currencies converted to U.S. dollars at current (1988) prices using purchasing power parity index (PPPI). Consult the glossary for an explanation of the PPPI.

SOURCE: Organization for Economic Co-operation and Development, Center for Educational Research and Innovation, International Indicators Project, 1992.

Table 3b: GSP per capita, by state: 1988

State	GSP per capita
Alabama	$15,522
Alaska	34,466
Arizona	17,996
Arkansas	14,505
California	22,803
Colorado	18,994
Connecticut	26,427
Delaware	21,629
District of Columbia	59,289
Florida	17,190
Georgia	19,172
Hawaii	21,210
Idaho	14,845
Illinois	20,888
Indiana	17,622
Iowa	16,781
Kansas	18,743
Kentucky	16,563
Louisiana	17,317
Maine	18,349
Maryland	19,963
Massachusetts	23,981
Michigan	18,565
Minnesota	20,260
Mississippi	13,801
Missouri	18,473
Montana	15,147
Nebraska	17,813
Nevada	23,261
New Hampshire	21,706
New Jersey	25,004
New Mexico	16,068
New York	23,461
North Carolina	18,616
North Dakota	15,146
Ohio	18,532
Oklahoma	15,294
Oregon	17,468
Pennsylvania	17,895
Rhode Island	17,987
South Carolina	15,556
South Dakota	14,158
Tennessee	17,676
Texas	19,197
Utah	15,642
Vermont	19,462
Virginia	21,125
Washington	19,022
West Virginia	14,151
Wisconsin	18,230
Wyoming	22,892

NOTE: See supplemental note to Indicator 3 on page 90 for details on calculation of the gross product for the District of Columbia.

SOURCE: U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Series P-25, No. 1058, State Population and Household Estimates: July 1, 1989; *Statistical Abstract of the United States, 1992*, Table 684.

Indicator 4: Labor force participation

The labor force participation rate is the percentage of the total population aged 15 to 64 years that is either employed or actively seeking work. Differences in participation rates between countries and states are the results of several factors, including the percentage of the population, particularly between the ages of 15 and 25, enrolled full–time in the education system, the number of people who have withdrawn from the labor force after being unable to find work, and the continued prevalence in many societies of the tradition of women not working in order to care for their families. Although this indicator shows differences between the genders in terms of participation in the labor force, it does not show differences in types of work or in salaries, two other indications of gender roles.

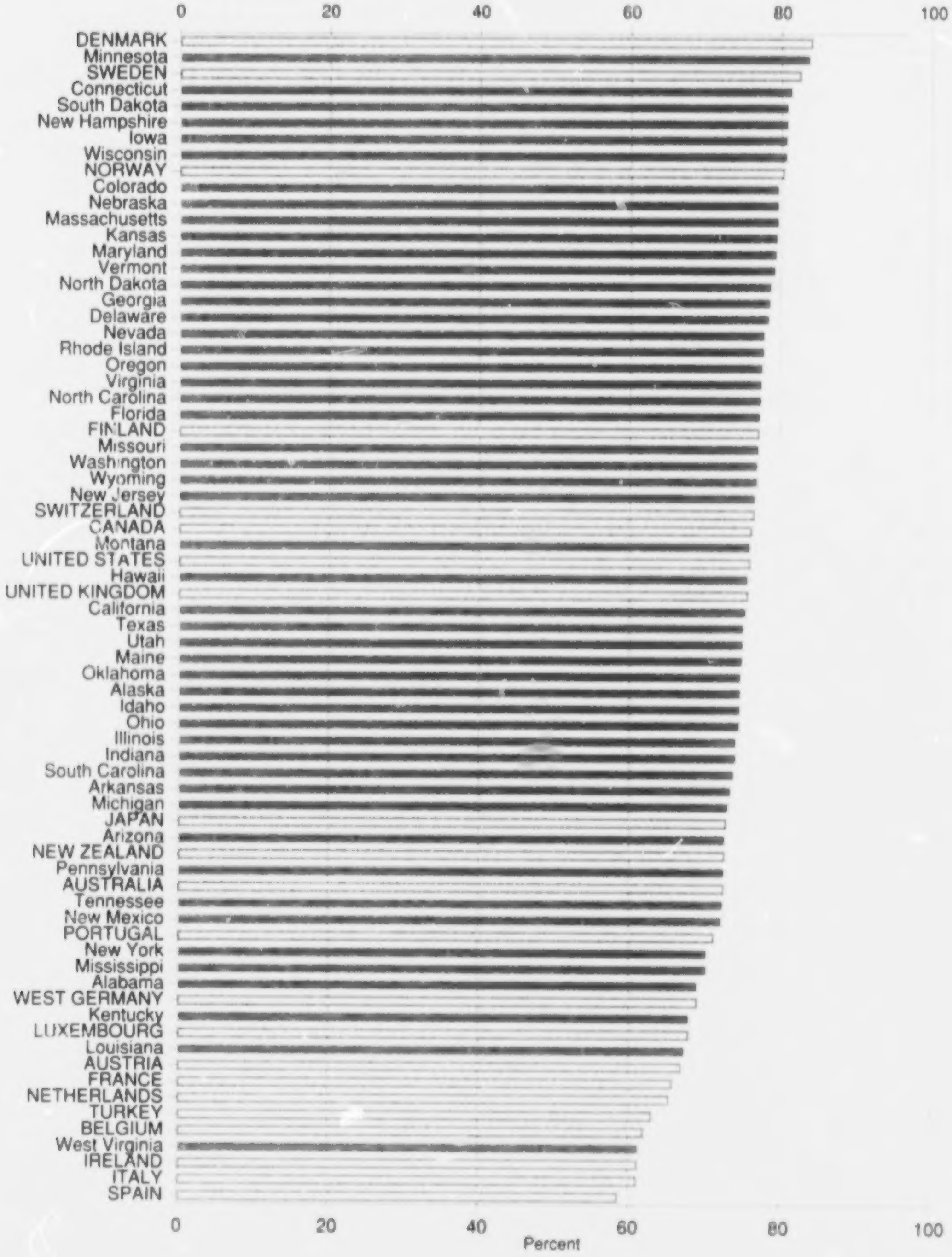
- **Of the G-7 countries in 1988, Canada, the United States, and the United Kingdom had the highest labor force participation rate, 76 percent. Japan's rate was 73 percent and West Germany's was 69 percent. Three non-G-7 countries — Norway, Sweden, and Denmark — had rates of 80 percent or higher.**

- **In all OECD countries, the labor force participation rate was higher for men than it was for women. The highest female participation rates (above 70 percent) and the smallest gaps between rates for men and women (below 15 percentage points) were in Sweden, Finland, Denmark, and Norway. The United States and Canada had the next highest rate for females, 67 percent, which was 18 percentage points lower than the rate for males.**

- **The U.S. states tended to have higher total labor force participation rates than the OECD countries. Almost half of the OECD countries had rates below 70 percent, whereas only four states — Alabama, Kentucky, Louisiana, and West Virginia — did.**

- **As in all the OECD countries, labor force participation rates in all the states were higher for men than for women. This difference was greatest in Louisiana and West Virginia (23.7 and 25.4 percentage points, respectively) and smallest in Rhode Island and Nevada (12.1 and 12.0 percentage points, respectively).**

Figure 4: **Labor force participation for persons aged 15 to 64, by country and state: 1988**



SOURCE: U.S. Department of Commerce, Bureau of the Census, March 1988 Current Population Survey. Organization for Economic Co-operation and Development, Center for Educational Research and Innovation, International Indicators Project, 1992.

Table 4a: Labor force participation rate for persons aged 15 to 64, by sex and country: 1988

OECD country	Participation rate Total	Male	Female
Australia	72.4	85.4	59.1
Austria	66.8	80.3	53.7
Belgium	61.8	72.2	51.2
Canada	76.0	85.3	66.6
Denmark	83.8	89.8	77.6
Finland	76.9	80.8	73.0
France	65.6	75.3	55.8
Ireland	61.0	83.9	37.6
Italy	60.9	78.4	43.7
Japan	72.7	87.1	58.4
Luxembourg	67.8	88.5	47.3
Netherlands	65.2	79.4	50.6
New Zealand	72.5	82.9	62.0
Norway	80.1	87.2	72.8
Portugal	71.1	84.3	58.7
Spain	58.4	77.5	39.3
Sweden	82.3	84.4	80.1
Switzerland	76.3	94.1	58.0
Turkey	62.9	86.5	38.7
United Kingdom	75.5	87.3	63.7
United States	75.8	84.9	66.8
West Germany	68.9	82.2	55.4

SOURCE: Organization for Economic Co-operation and Development, Center for Educational Research and Innovation, International Indicators Project, 1992.

Table 4b: Labor force participation rate for persons aged 15 to 64, by sex and state: 1988

State	Participation rate		
	Total	Male	Female
Alabama	68.9	78.8	59.7
Alaska	74.5	82.0	67.1
Arizona	72.5	81.9	63.6
Arkansas	73.3	82.1	65.1
California	75.3	84.9	65.7
Colorado	79.4	88.4	70.6
Connecticut	81.1	88.0	74.4
Delaware	78.2	85.8	70.4
District of Columbia	80.7	83.5	78.1
Florida	77.0	84.7	69.9
Georgia	78.4	87.2	70.5
Hawaii	75.5	82.9	68.0
Idaho	74.5	83.7	65.5
Illinois	73.9	83.6	64.7
Indiana	73.9	82.2	66.1
Iowa	80.5	88.5	72.4
Kansas	79.3	88.3	70.6
Kentucky	67.8	79.7	57.3
Louisiana	67.3	79.8	56.1
Maine	74.8	84.9	65.6
Maryland	79.2	85.8	72.9
Massachusetts	79.4	88.1	71.5
Michigan	72.9	82.1	64.2
Minnesota	83.5	90.1	76.9
Mississippi	70.1	81.2	59.5
Missouri	76.9	84.8	68.9
Montana	75.8	82.7	69.0
Nebraska	79.4	85.7	73.1
Nevada	77.6	83.5	71.5
New Hampshire	80.6	90.5	71.3
New Jersey	76.4	87.0	66.3
New Mexico	72.1	82.2	62.1
New York	70.2	81.5	59.7
North Carolina	77.2	84.5	70.3
North Dakota	78.5	85.8	70.9
Ohio	74.4	84.1	65.1
Oklahoma	74.6	83.1	66.2
Oregon	77.4	83.7	70.7
Pennsylvania	72.5	83.5	62.0
Rhode Island	77.6	83.7	71.6
South Carolina	73.7	85.2	63.7
South Dakota	80.7	87.2	74.3
Tennessee	72.3	81.0	63.3
Texas	74.9	85.3	64.8
Utah	74.9	86.1	63.8
Vermont	79.0	85.3	72.9
Virginia	77.2	87.1	67.6
Washington	76.7	85.2	68.6
West Virginia	61.2	74.7	49.3
Wisconsin	80.5	90.1	70.9
Wyoming	76.7	85.2	67.7

SOURCE: U.S. Department of Commerce, Bureau of the Census, March 1988 Current Population Survey.

PARTICIPATION INDICATORS

Indicator 5: Participation in formal education

Participation in formal education is measured here by the number of full-time equivalent (FTE) students enrolled in school per 100 persons aged 2–29 in the population. Participation is influenced not only by "demand" — the number of persons who can and wish to attend school — but also by "supply" — the number of places available for them. Preprimary or post-compulsory grade levels are more available in some states and countries than others. A high participation ratio may reflect a high value placed on education by a society, or it may reflect an economy dependent on a highly trained workforce. National or state education strategies can produce a greater availability of educational opportunities.

- **The participation ratio for 2–29 year olds in the United States in 1988 was 55, just above West Germany's ratio of 54. Among the G-7 countries, five had participation ratios between 53 and 58. Italy had the lowest ratio (50) and France the highest (62).**

- **Part-time enrollment made up a substantial portion of participation in the English-speaking countries. Only Canada, Australia, New Zealand, the United Kingdom, and the United States had part-time ratios above nine.**

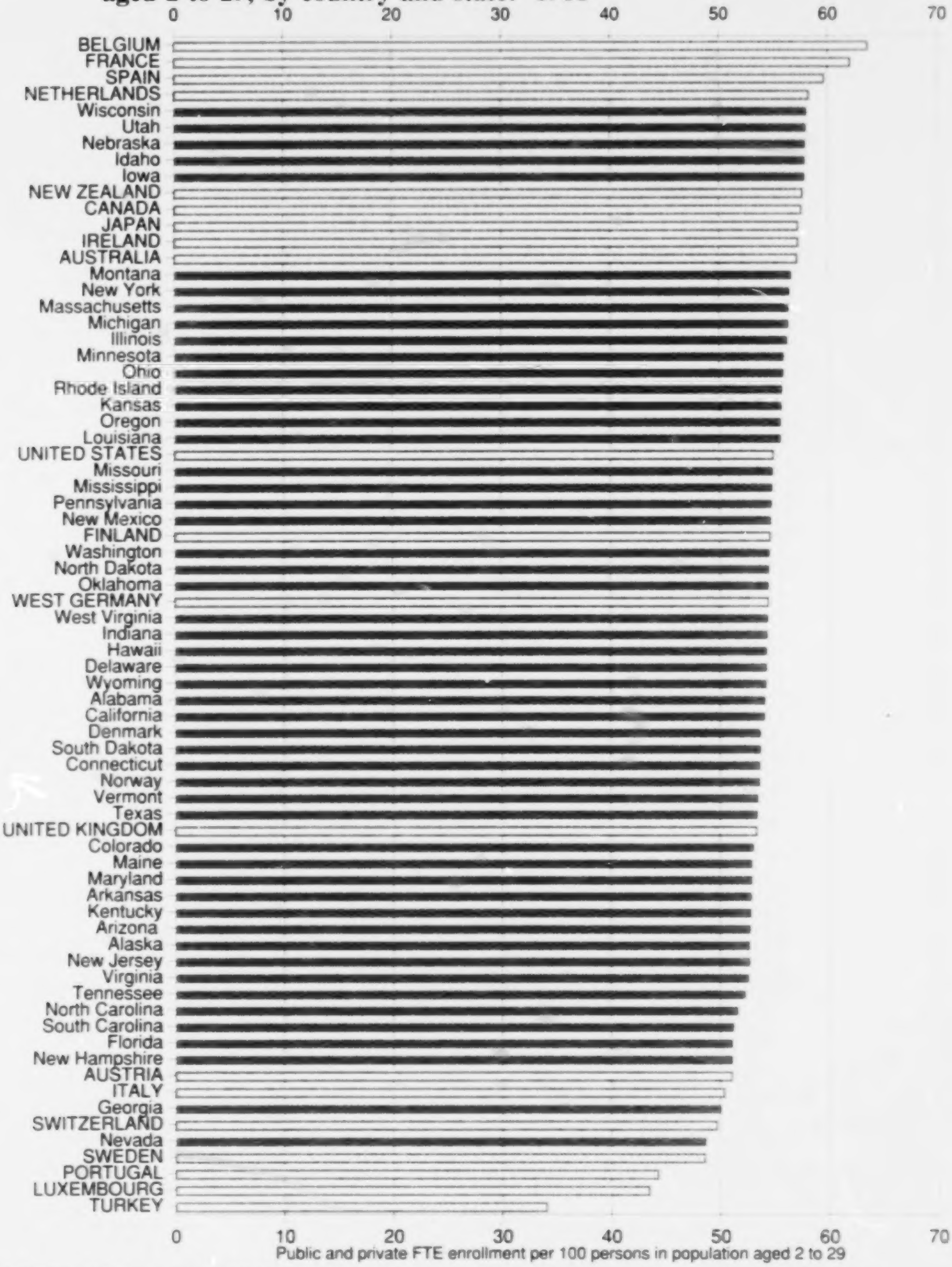
- **The range of overall enrollment ratios was smaller among the states than among the OECD nations. Whereas two OECD nations, Belgium and France, had ratios over 60 and five nations had ratios below 50, no state had a ratio higher than 58 and only one state, Nevada, had a ratio below 50.**

Notes on Interpretation:

This indicator includes students enrolled in public preprimary schools, public and private primary through secondary schools, and public and private universities (both undergraduate and graduate levels).

This enrollment ratio should *not* be interpreted as an enrollment *rate*. Enrollment ratios allow comparisons across states and nations by standardizing enrollment in a particular education level or, as with this indicator, across all education levels, to the size of the population of the age groups typical for enrollment in those levels. It is not, however, an estimate of the percentage of persons in those age groups who are enrolled in education. See note on page 106 in the appendix for a discussion of the calculation of this indicator.

Figure 5: Public and private FTE enrollment per 100 persons in population aged 2 to 29, by country and state: 1988



SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data Survey, 1988-89; Schools and Staffing Survey, 1987-88; and Integrated Postsecondary Education Data System, 1988-89. U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Series P-25, No. 1058, State Population and Household Estimates: July 1, 1989; and 1990 Census of the Population. Organization for Economic Co-operation and Development, Center for Educational Research and Innovation, International Indicators Project, 1992.

Table 5a: Public and private enrollment per 100 persons in population aged 2 to 29, by control of school, enrollment status, and country: 1988

OECD country	Public and Private			Public full-time	Private full-time
	FTE	Full-time	Part-time		
Australia	57.1	47.7	12.7	36.4	11.3
Austria	51.0	51.0	0.0	—	—
Belgium	63.6	56.4	7.2	22.5	33.9
Canada	57.5	49.4	12.1	47.5	1.9
Denmark	53.7	53.7	0.0	49.9	3.8
Finland	54.6	54.6	0.0	52.7	1.9
France	62.0	62.0	0.0	50.2	11.8
Ireland	57.2	55.9	1.8	55.2	0.7
Italy	50.3	—	—	45.0	5.3
Japan	57.2	56.7	0.7	43.5	13.3
Luxembourg	43.4	43.4	0.0	41.4	2.0
Netherlands	58.2	55.2	3.6	15.1	40.1
New Zealand	57.6	46.5	13.1	44.9	1.6
Norway	53.6	49.0	5.4	46.4	2.6
Portugal	44.2	—	—	39.7	4.5
Spain	59.6	59.6	0.0	41.6	18.0
Sweden	48.5	—	—	47.6	0.5
Switzerland	49.6	48.9	1.2	46.6	2.3
Turkey	34.0	34.0	0.0	33.6	0.4
United Kingdom	53.3	43.7	10.6	40.9	2.8
United States	54.9	48.3	9.3	41.2	7.1
West Germany	54.4	54.2	0.2	—	—

— Not available.

NOTE: See supplemental note to Indicator 5 on page 90 for details on indicator calculation for Australia, Belgium, Italy, Luxembourg, Portugal, and Sweden.

SOURCE: Organization for Economic Co-operation and Development, Center for Educational Research and Innovation, International Indicators Project, 1992.

Table 5b: Public and private enrollment per 100 persons in population aged 2 to 29, by control of school, enrollment status, and state: 1988

State	Public and Private			Public	Private
	FTE	Full-time	Part-time	full-time	full-time
Alabama	54.1	52.6	3.1	46.3	6.3
Alaska	52.7	49.0	7.3	45.5	3.5
Arizona	52.7	48.0	9.4	43.6	4.5
Arkansas	52.9	51.7	2.2	47.1	4.7
California	54.1	49.9	8.3	42.1	7.8
Colorado	53.0	50.5	5.1	45.3	5.2
Connecticut	53.6	50.5	6.3	40.0	10.5
Delaware	54.3	51.8	4.9	40.1	11.7
District of Columbia	68.9	62.8	12.1	36.3	26.5
Florida	51.1	48.3	5.6	40.0	8.3
Georgia	50.0	48.6	2.7	42.4	6.2
Hawaii	54.3	51.9	4.8	40.1	11.7
Idaho	57.9	56.3	3.2	51.1	5.1
Illinois	56.2	52.8	6.9	41.5	11.3
Indiana	54.3	52.4	3.8	44.7	7.8
Iowa	57.8	56.0	3.6	47.2	8.8
Kansas	55.7	52.8	5.8	46.6	6.2
Kentucky	52.8	51.1	3.4	43.9	7.2
Louisiana	55.6	54.5	2.3	43.6	10.9
Maine	52.9	51.0	3.7	45.5	5.5
Maryland	52.9	49.6	6.6	40.0	9.6
Massachusetts	56.3	53.0	6.6	38.6	14.5
Michigan	56.3	53.0	6.6	44.9	8.2
Minnesota	55.9	53.4	5.0	44.6	8.8
Mississippi	54.8	53.8	2.1	46.9	6.9
Missouri	54.9	52.4	4.9	41.8	10.6
Montana	56.6	55.0	3.2	50.5	4.5
Nebraska	57.9	54.7	6.4	45.5	9.2
Nevada	48.6	44.8	7.7	41.2	3.5
New Hampshire	51.0	48.8	4.5	39.5	9.2
New Jersey	52.7	50.3	4.8	39.5	10.8
New Mexico	54.7	51.6	6.1	47.4	4.2
New York	56.4	53.9	5.1	40.0	13.9
North Carolina	51.6	49.4	4.3	44.2	5.2
North Dakota	54.5	53.3	2.4	49.1	4.2
Ohio	55.9	53.7	4.4	43.9	9.8
Oklahoma	54.4	51.8	5.2	47.1	4.7
Oregon	55.6	52.6	6.1	46.4	6.2
Pennsylvania	54.8	52.8	3.8	38.8	14.0
Rhode Island	55.7	52.5	6.4	37.8	14.7
South Carolina	51.2	49.8	2.8	43.7	6.1
South Dakota	53.7	52.2	3.0	46.2	6.0
Tennessee	52.2	50.5	3.4	43.8	6.7
Texas	53.4	51.1	4.7	46.3	4.8
Utah	58.0	55.8	4.3	51.2	4.6
Vermont	53.4	51.4	4.1	42.7	8.7
Virginia	52.6	49.7	5.6	43.8	5.9
Washington	54.6	51.9	5.3	45.7	6.2
West Virginia	54.4	52.6	3.5	49.1	3.6
Wisconsin	58.0	55.7	4.7	44.7	11.0
Wyoming	54.2	51.8	4.8	49.7	2.1

SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data Survey, 1988–89; Schools and Staffing Survey, 1987–88; and Integrated Postsecondary Education Data System, 1988–89. U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Series P-25, No. 1058, State Population and Household Estimates: July 1, 1989; and 1990 Census of the Population.

Indicator 6: Upper secondary enrollment

In the United States, upper secondary education is encompassed by the last three years of high school. In some other countries, a large portion of upper secondary enrollment is in vocational, technical, and apprenticeship programs. Upper secondary enrollment is measured by the number of full-time upper secondary students per 100 persons in the enrollment reference group for upper secondary education. The *enrollment reference group* is comprised of the persons in the age range typical for attendance in upper secondary education, as identified by each country. Countries and states with high upper secondary enrollment ratios may have economies that require highly skilled labor forces and depend on the education system to provide necessary training. Countries and states with relatively high ratios also may have a large number of students outside the typical age range enrolled in upper secondary education. This situation is common in countries where older students return for specialized vocational training.

- **In 1988, the United States had an upper secondary enrollment ratio of 90, in the middle of the range of the thirteen OECD countries with a theoretical duration of three years. Finland, West Germany, and Denmark had the highest ratios in this group (above 100), while Turkey and Portugal had the lowest (below 50).**

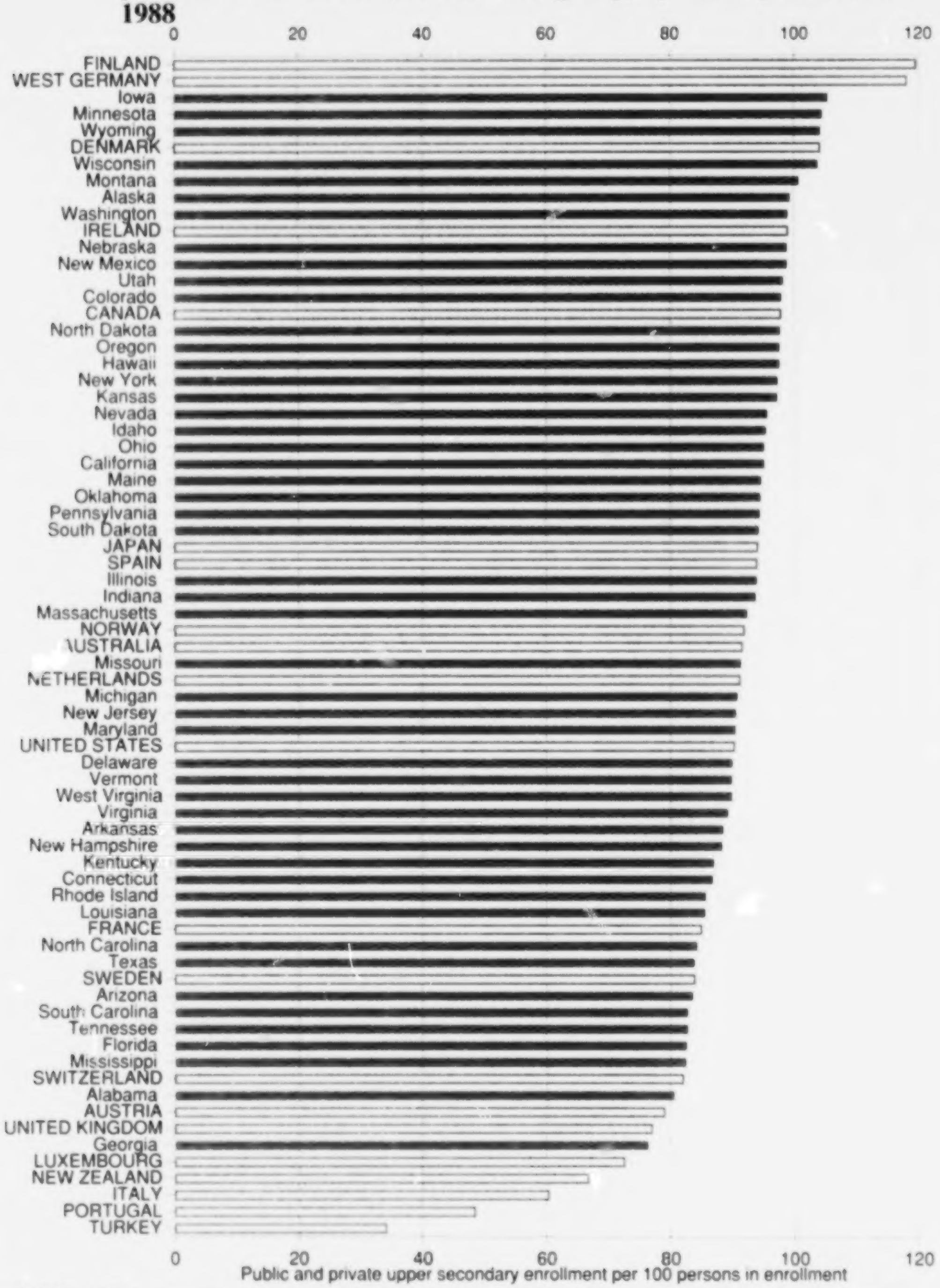
- **All states had upper secondary enrollment ratios higher than five OECD countries, Luxembourg, New Zealand, Italy, Portugal, and Turkey, and lower than two OECD countries, Finland and West Germany.**

Notes on Interpretation

Countries differ greatly in how they classify certain programs as either higher education or upper secondary programs. For example, some programs that are begun subsequent to the completion of general secondary education are classified as non-university higher education in the United States and in parts of Canada, whereas they are defined as upper secondary education in most other countries.

Enrollment ratios should *not* be interpreted as enrollment *rates*. Enrollment ratios allow comparisons across states and nations by standardizing enrollment in a particular education level to the size of the population in an age group typical for enrollment in that level. It is not, however, an estimate of the percentage of that age group who are enrolled in education at that level. See note on page 106 in the appendix for a discussion of the calculation of this indicator.

Figure 6: Full-time public and private upper secondary enrollment per 100 persons in the enrollment reference group, by country and state: 1988



SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data Survey, 1988-89, and Schools and Staffing Survey, 1987-88. U.S. Department of Commerce, Bureau of the Census, 1990 Census of the Population; and Current Population Reports, Series P-25, No. 1058, State Population and Household Estimates: July 1, 1989. Organization for Economic Co-operation and Development, Center for Educational Research and Innovation, International Indicators Project, 1992.

Table 6a: Full-time public and private upper secondary enrollment per 100 persons in the enrollment reference group, by degree of comprehensiveness of school system and country: 1988

Degree of comprehensiveness of school system and OECD country	Enrollment per 100 persons in enrollment reference group
Comprehensive schools throughout secondary level	
Japan	94.0
United States	90.2
Comprehensive lower secondary and differentiated upper secondary	
Australia	91.5
Canada	97.8
Denmark	104.1
Finland	119.6
France	84.9
Italy	60.2
New Zealand	66.6
Norway	91.8
Spain	93.9
Sweden	83.8
Turkey	34.0
United Kingdom	76.9
Differentiated upper and lower secondary	
Austria	78.9
Ireland	98.9
Luxembourg	72.4
Netherlands	91.1
Portugal	48.3
Switzerland	81.9
West Germany	118.1

NOTE: *Comprehensive* schools offer a general curriculum rather than one intended to prepare students for specific occupations, higher education, or training. *Differentiated* schools offer a particular type of curriculum, such as college preparatory or vocational. See supplemental note to Indicator 6 on page 91 for details on calculation of the ratios for Luxembourg, Spain, and the United Kingdom. See note in the appendix on page 106 for an explanation of enrollment reference groups.

SOURCE: Organization for Economic Co-operation and Development, Center for Educational Research and Innovation, International Indicators Project, 1992.

Table 6b: Full-time public and private upper secondary enrollment per 100 persons in the population aged 15 to 17, by state: 1988

State	Enrollment per 100 persons in enrollment reference group
Alabama	80.5
Alaska	99.3
Arizona	83.5
Arkansas	88.4
California	95.1
Colorado	97.9
Connecticut	86.7
Delaware	89.9
District of Columbia	96.8
Florida	82.5
Georgia	76.3
Hawaii	97.6
Idaho	95.4
Illinois	93.9
Indiana	93.7
Iowa	105.4
Kansas	97.2
Kentucky	86.9
Louisiana	85.5
Maine	94.6
Maryland	90.4
Massachusetts	92.3
Michigan	90.7
Minnesota	104.5
Mississippi	82.4
Missouri	91.3
Montana	100.7
Nebraska	98.8
Nevada	95.6
New Hampshire	88.2
New Jersey	90.5
New Mexico	98.8
New York	97.3
North Carolina	84.2
North Dakota	97.7
Ohio	95.1
Oklahoma	94.5
Oregon	97.6
Pennsylvania	94.4
Rhode Island	85.6
South Carolina	82.7
South Dakota	94.2
Tennessee	82.7
Texas	83.8
Utah	98.2
Vermont	89.8
Virginia	89.2
Washington	98.9
West Virginia	89.8
Wisconsin	103.8
Wyoming	104.2

NOTE: See supplemental note to Indicator 6 on page 91 for details on estimation of private school enrollments for 1988 for each state.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data Survey, 1988–89; and Schools and Staffing Survey, 1987–88. U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Series P-25, No. 1058, State Population and Household Estimates: July 1, 1989; and 1990 Census of the Population.

Indicator 7: Non-university higher education enrollment

Non-university higher education institutions grant degrees which are not equivalent to university degrees, but may allow students to proceed to university degree programs. In the United States, these institutions are two-year public and private institutions, mainly community and junior colleges. Non-university higher education enrollment is measured by the number of non-university higher education students per 100 persons in the enrollment reference group for this type of education in each country or state. Differences among countries or states may reflect the different roles played by non-university postsecondary education. Countries or states with relatively high enrollment ratios may have well-established systems of non-university higher education that grant credentials for jobs or progression to higher levels of education. In other countries or states, the same role may be played at either the secondary or university level. Countries and states with relatively high ratios may have a large number of students outside the typical age range enrolled in non-university higher education.

- **The United States had a non-university higher education enrollment ratio of 45 in 1988. Among the OECD countries, only Canada had a higher ratio.**

- **In Australia, Canada, and the United States, part-time enrollment ratios were considerably higher than full-time ratios. The reverse was true in most other countries. West Germany, Japan, and France reported no, or almost no, part-time students.**

- **Non-university higher education is more prevalent in the states than in the OECD countries as a whole. About half of the states had enrollment ratios above 35. About half of the OECD countries had ratios below 15.**

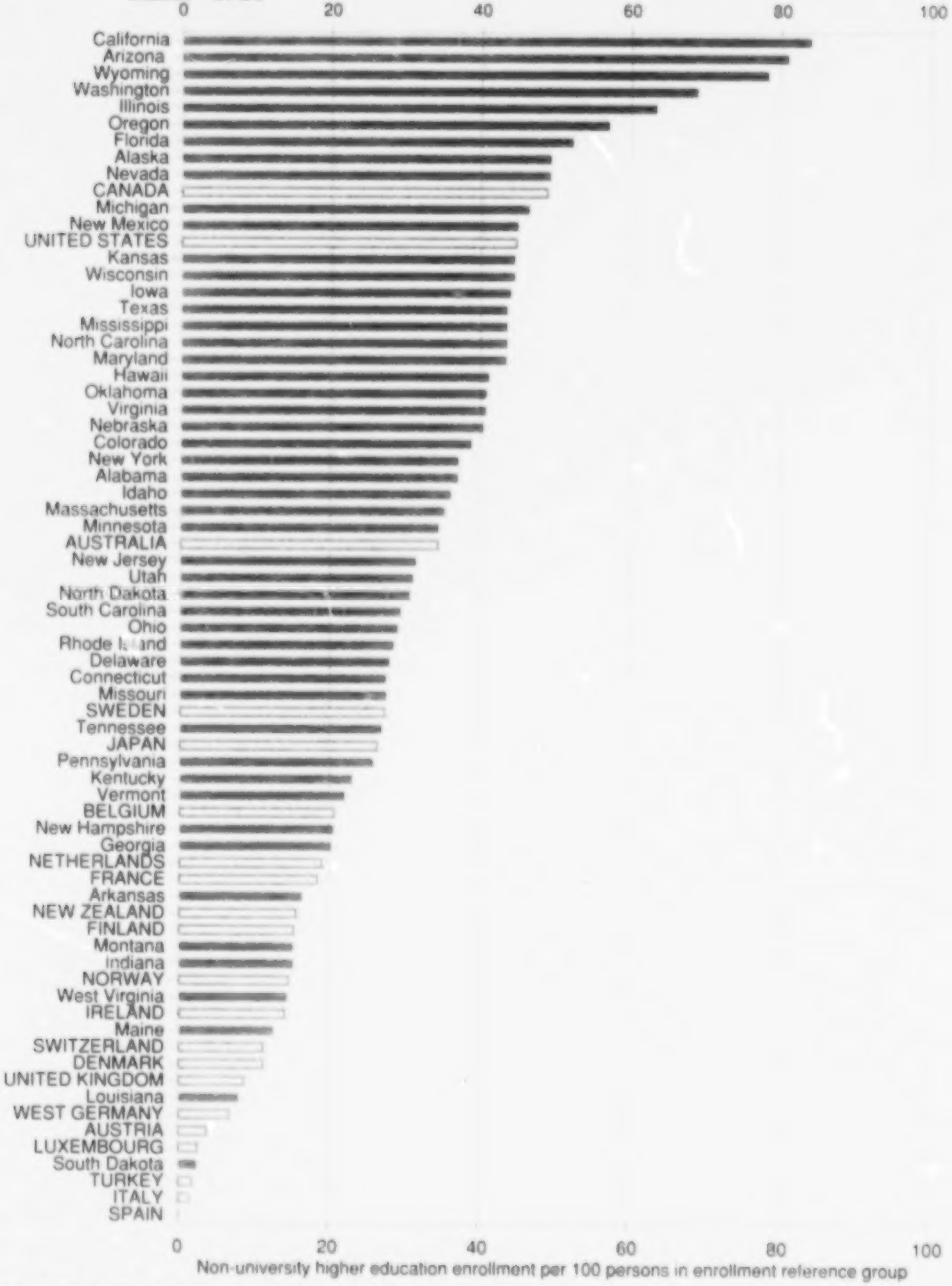
- **The range of non-university higher education enrollments among the states was much wider than that among OECD countries. The states' full-time equivalent enrollment ratios ranged from less than 10 in Louisiana and South Dakota to over 80 in Arizona and California. Ratios of the OECD countries ranged from below 2 in Italy, Turkey, and Spain, to over 48 in Canada.**

Notes on Interpretation:

There are marked differences among countries with respect to whether certain programs are classified as belonging to the university, non-university, or upper secondary sector. For example, in some countries, programs leading to qualifications in teaching and nursing are considered to be university programs; in others, they are non-university programs. Furthermore, some programs that are begun subsequent to the completion of general secondary education are classified as non-university higher education in parts of Canada and the United States, whereas they are defined as upper secondary education in most other countries.

Enrollment ratios should *not* be interpreted as enrollment *rates*. Enrollment ratios allow comparisons across states and nations by standardizing enrollment in a particular education level to the size of the population in an age group typical for enrollment in that level. It is not, however, an estimate of the percentage of that age group who are enrolled in education at that level. See note on page 106 in the appendix for a discussion of the calculation of this indicator.

Figure 7: Public and private non-university higher education enrollment per 100 persons in the enrollment reference group, by country and state: 1988



SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data Systems, 1988-89. U.S. Department of Commerce, Bureau of the Census, Series P-25, No. 1058, State Population and Household Estimates: July 1, 1989. Organization for Economic Co-operation and Development, Center for Educational Research and Innovation, International Indicators Project, 1992.

BEST COPY AVAILABLE

Table 7a: Public and private non-university higher education enrollment per 100 persons in the enrollment reference group, by enrollment status, sex, and country: 1988

OECD country	Full-time equivalents			Full-time			Part-time		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Australia	34.3	30.7	38.1	12.6	8.7	16.6	43.4	43.9	42.9
Austria	3.7	2.3	5.2	3.7	2.3	5.2	0	0	0
Belgium	20.6	15.2	26.2	20.6	15.2	26.2	0	0	0
Canada	48.7	45.8	51.7	27.0	26.1	27.8	43.5	39.4	47.8
Denmark	11.2	6.5	16.1	11.2	6.5	16.1	*	*	*
Finland	15.3	11.8	18.9	15.3	11.8	18.9	0	0	0
France	18.4	16.2	20.8	18.4	16.2	20.8	0	0	0
Ireland	14.1	16.0	12.1	10.3	11.5	9.2	7.5	9.0	5.9
Italy	1.4	1.1	1.7	—	—	—	—	—	—
Japan	26.3	15.4	37.8	25.9	15.1	37.3	0.7	0.5	0.9
Luxembourg	2.5	—	—	2.5	—	—	0	0	0
Netherlands	19.0	20.1	17.9	16.1	17.2	15.0	5.8	5.9	5.7
New Zealand	15.6	15.0	16.2	7.6	4.1	11.1	16.0	21.8	10.1
Norway	14.6	13.8	15.5	11.4	10.7	12.1	6.5	6.3	6.8
Spain	*	*	*	*	*	*	0	0	0
Sweden	27.3	21.6	33.2	—	—	—	—	—	—
Switzerland	11.2	15.8	6.5	7.5	9.7	5.1	7.5	12.2	2.7
Turkey	1.8	2.5	1.2	1.8	2.5	1.2	0	0	0
United Kingdom	8.7	8.7	8.8	3.6	3.9	3.3	10.3	9.7	11.0
United States	44.6	40.2	49.1	24.0	23.6	24.3	41.3	33.2	49.6
West Germany	6.7	4.6	8.8	6.3	4.0	8.7	0.8	1.2	0.3

— Not available

*These are numbers so small as to be negligible.

NOTE: See supplemental note to Indicator 7 on page 92 for details on indicator calculation for France, Italy, Luxembourg, Sweden, and the United Kingdom. See note in the appendix on page 106 for an explanation of enrollment reference groups.

SOURCE: Organization for Economic Co-operation and Development, Center for Educational Research and Innovation, International Indicators Project, 1992.

Table 7b: Public and private non-university higher education enrollment per 100 persons aged 18 to 19, by enrollment status, sex, and state: 1988

State	Full-time equivalents			Full-time			Part-time		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Alabama	36.9	34.0	39.9	28.1	26.0	30.2	17.7	15.9	19.4
Alaska	49.2	40.7	57.9	11.9	11.6	12.3	74.5	58.2	91.0
Arizona	80.8	71.4	90.5	27.1	27.5	26.7	107.4	88.0	127.6
Arkansas	16.4	12.2	20.6	10.8	8.5	13.2	11.2	7.5	14.9
California	83.8	73.8	94.4	34.7	33.3	36.2	98.1	80.9	116.5
Colorado	38.7	32.5	45.2	18.0	17.0	19.1	41.3	30.9	52.3
Connecticut	27.5	21.8	33.5	11.0	10.4	11.6	33.1	22.8	43.7
Delaware	27.9	25.0	30.5	14.9	14.1	15.7	25.9	21.9	29.6
District of Columbia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Florida	52.1	44.4	60.0	26.1	24.2	28.1	52.0	40.3	63.8
Georgia	20.3	17.9	22.8	12.9	11.4	14.4	14.9	13.0	16.9
Hawaii	41.0	36.3	46.0	23.3	21.8	24.9	35.3	29.0	42.2
Idaho	36.0	31.1	40.7	30.3	27.0	33.5	11.4	8.3	14.4
Illinois	63.2	52.4	74.5	30.6	27.8	33.6	65.2	49.3	81.9
Indiana	15.2	15.5	14.8	8.6	8.9	8.4	13.0	13.2	12.9
Iowa	43.9	42.0	45.9	34.1	35.0	33.2	19.7	13.9	25.5
Kansas	44.4	37.9	51.3	23.2	22.5	23.9	42.4	30.8	54.8
Kentucky	23.0	16.8	29.8	15.7	12.3	19.4	14.7	8.9	20.8
Louisiana	8.0	7.0	9.0	5.0	4.5	5.4	6.1	4.9	7.3
Maine	12.6	12.7	12.6	8.8	9.1	8.4	7.7	7.3	8.2
Maryland	43.3	35.7	51.1	17.9	17.0	18.8	50.9	37.4	64.5
Massachusetts	35.2	26.6	43.6	21.1	16.3	25.7	28.3	20.6	35.8
Michigan	46.3	40.8	51.8	19.1	17.3	20.9	54.3	47.0	61.7
Minnesota	34.4	31.5	37.4	23.6	24.2	23.0	21.6	14.5	28.8
Mississippi	43.4	37.6	49.2	36.0	32.1	39.9	14.9	11.1	18.7
Missouri	27.5	23.1	32.0	14.2	13.2	15.1	26.7	19.8	33.7
Montana	15.2	11.5	19.2	7.8	6.5	9.1	15.0	9.9	20.3
Nebraska	40.3	37.1	43.6	18.9	19.2	18.5	43.0	35.8	50.2
Nevada	49.1	40.1	58.3	9.0	8.2	9.7	80.3	63.7	97.2
New Hampshire	20.5	20.3	20.7	10.3	10.3	10.3	20.3	19.9	20.7
New Jersey	31.4	26.3	36.7	16.7	15.1	18.4	29.4	22.3	36.7
New Mexico	44.8	40.5	49.1	18.5	17.8	19.1	52.7	45.4	60.0
New York	37.0	31.0	43.0	26.5	23.2	29.9	21.0	15.8	26.2
North Carolina	43.4	34.4	53.0	25.3	20.4	30.5	36.2	28.0	45.0
North Dakota	30.6	32.6	28.3	25.9	29.1	22.4	9.4	7.1	11.8
Ohio	29.0	26.0	32.0	14.7	12.6	16.8	28.7	26.8	30.5
Oklahoma	40.7	35.5	46.2	20.6	20.3	20.9	40.1	30.4	50.6
Oregon	56.9	51.5	62.3	29.6	29.1	30.1	54.6	44.9	64.4
Pennsylvania	25.8	24.1	27.4	17.2	17.8	16.7	17.1	12.7	21.5
Rhode Island	28.5	22.5	34.3	13.8	12.5	15.0	29.4	20.0	38.6
South Carolina	29.4	25.1	33.9	20.5	17.6	23.6	17.7	14.9	20.6
South Dakota	2.4	0.7	4.0	1.5	0.5	2.4	1.8	0.5	3.1
Tennessee	26.9	21.9	32.1	16.4	13.7	19.2	21.0	16.4	25.8
Texas	43.4	39.6	47.4	22.7	22.0	23.3	41.5	35.2	48.1
Utah	31.0	33.8	28.3	21.3	23.1	19.6	19.3	21.3	17.4
Vermont	22.0	16.6	27.0	11.6	11.3	11.8	20.8	10.5	30.4
Virginia	40.6	33.4	48.1	16.4	14.2	18.6	48.4	38.4	59.0
Washington	68.7	58.4	79.6	38.7	36.4	41.2	60.0	44.1	76.8
West Virginia	14.4	9.8	19.1	8.8	6.5	11.1	11.3	6.6	16.0
Wisconsin	44.4	40.2	48.6	27.3	25.3	29.3	34.1	29.8	38.5
Wyoming	78.1	65.1	92.3	47.3	44.8	49.9	61.7	40.6	84.8

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, 1992. U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Series P-25, No. 1058, State Population and Household Estimates: July 1, 1989.

Indicator 8: University enrollment

University participation is measured in this indicator by the number of full-time equivalent students of any age enrolled in both undergraduate and graduate education per 100 persons in the enrollment reference group for university participation in that country or state. The *enrollment reference group* is comprised of the persons in the age range typical for attendance in university education, as identified by each country. A high participation ratio suggests that university-level education is widely available and highly valued. Varying ratios between men and women are often the result of different gender roles within a society. Countries and states with relatively high ratios may also have large numbers of university students from outside the typical age range, or students who extend their student status beyond the normal number of years needed to finish a degree.

- **Among the G-7 countries, both Canada and the United States had relatively high university participation ratios in 1988 (28 and 25, respectively). In addition, unlike many other countries, both had higher participation ratios for women than for men. Japan showed the largest disparity between the participation ratios of men and women, with a ratio of 19 for men and 7 for women.**

- **University participation ratios of the states were generally much higher than those of the OECD nations. The ratios among states ranged from below 16 in Alaska and Florida, to above 40 in Massachusetts and Rhode Island. Ratios among the countries ranged from below 10 in Luxembourg, the Netherlands, Portugal, and Turkey, to 25 and above in Austria and Canada.**

- **The lowest university participation ratio among the states (15 in Alaska) was still higher than the ratios of over half of the OECD nations.**

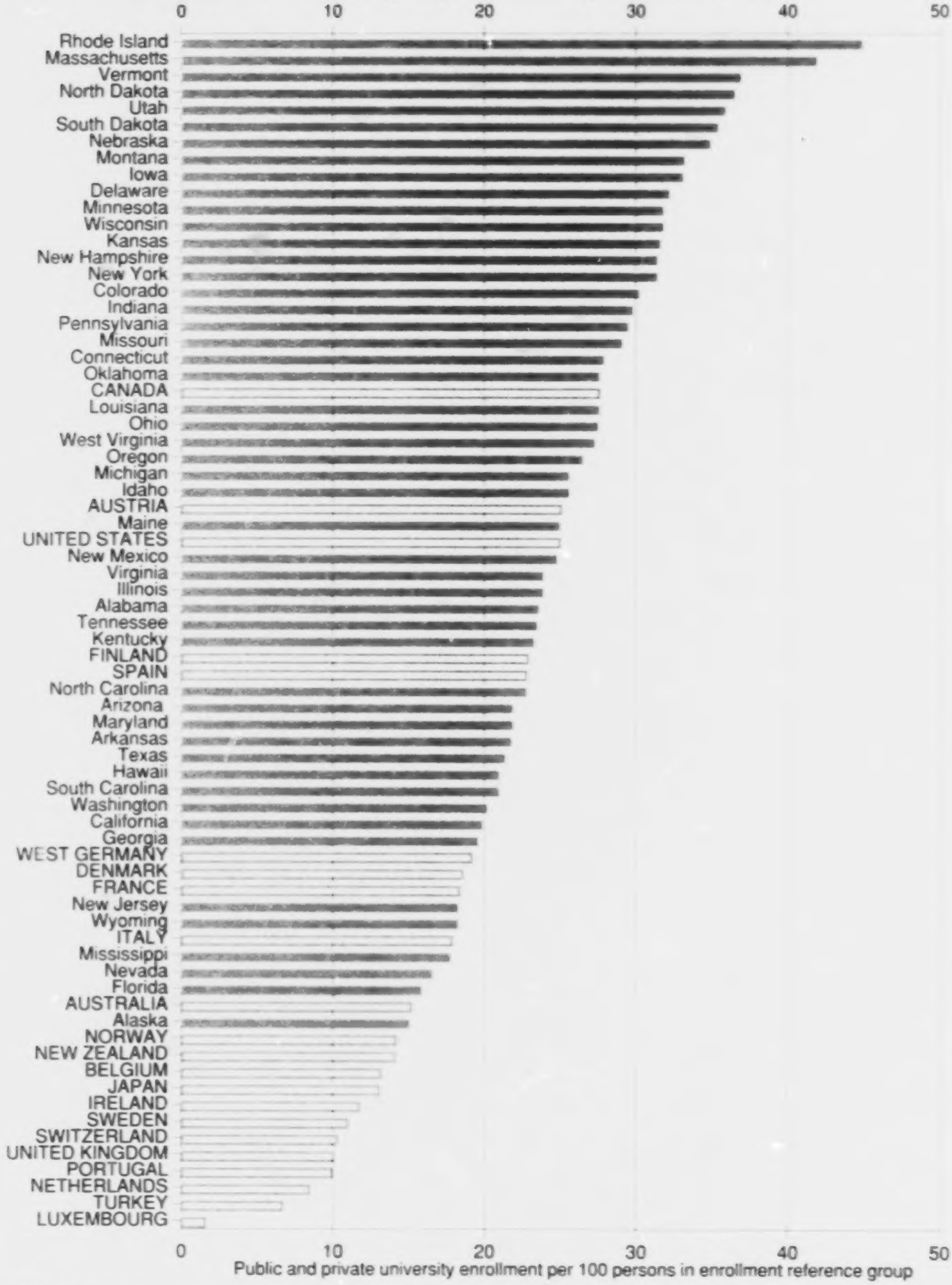
Notes on Interpretation:

All students enrolled in a country or state's universities are included in the university enrollment figures. That includes students who had lived in other countries or states before attending the university. Some states and countries, particularly those with a relatively large public university system and many private universities, may have a surplus of "in-migrant" students. Other states and countries, particularly those with a relatively small public university system and few private universities, may have a deficit of "out-migrant" students. Among OECD countries, Luxembourg is notable for a deficit of out-migrant students, as most of its university students attend universities in neighboring countries.

There are marked differences among countries with respect to whether certain programs are classified as belonging to the university or non-university sector. For example, in some countries, programs leading to qualifications in teaching and nursing are considered to be university programs; in others, they are non-university programs.

Enrollment ratios should *not* be interpreted as enrollment *rates*. Enrollment ratios allow comparisons across states and nations by standardizing enrollment in a particular education level to the size of the population in an age group typical for enrollment in that level. It is not, however, an estimate of the percentage of that age group who are enrolled in education at that level. See note on page 106 in the appendix for a discussion of the calculation of this indicator.

Figure 8: Public and private university enrollment per 100 persons in the enrollment reference group, by country and state: 1988



SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, 1988-89. U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Series P-25, No. 1058, State Population and Household Estimates: July 1, 1989. Organization for Economic Co-operation and Development, Center for Educational Research and Innovation, International Indicators Project, 1992.

Table 8a: Public and private university enrollment per 100 persons in the enrollment reference group, by enrollment status, sex, and country: 1988

	Full-time equivalents			Full-time			Part-time		
OECD country	Total	Male	Female	Total	Male	Female	Total	Male	Female
Australia	15.1	15.4	14.7	11.2	11.6	10.8	7.7	7.5	7.9
Austria	25.0	28.0	21.9	25.0	28.0	21.9	0.0	0.0	0.0
Belgium	13.1	15.5	10.7	13.1	15.5	10.7	0.0	0.0	0.0
Canada	27.5	25.4	29.6	21.0	20.5	21.4	13.0	9.7	16.4
Denmark	18.5	20.6	16.4	18.5	20.6	16.4	0.0	0.0	0.0
Finland	22.8	23.1	22.6	22.8	23.1	22.6	0.0	0.0	0.0
France	18.3	17.4	19.2	18.3	17.4	19.2	0.0	0.0	0.0
Ireland	11.7	12.1	11.4	11.3	11.5	11.0	1.0	1.2	0.7
Italy	17.8	18.6	17.0	—	—	—	—	—	—
Japan	13.0	18.9	7.0	12.5	18.2	6.5	1.1	1.3	0.9
Luxembourg	1.5	—	—	1.5	—	—	0.0	0.0	0.0
Netherlands	8.4	10.1	6.7	8.1	9.7	6.5	0.6	0.7	0.5
New Zealand	14.0	14.2	13.9	10.1	11.1	9.0	7.9	6.1	9.8
Norway	14.1	12.6	15.6	12.9	11.7	14.2	2.3	1.9	2.8
Portugal	9.9	—	—	—	—	—	—	—	—
Spain	22.7	22.1	23.3	22.7	22.1	23.3	0.0	0.0	0.0
Sweden	10.9	11.7	10.0	—	—	—	—	—	—
Switzerland	10.2	13.1	7.4	10.2	13.1	7.4	0.0	0.0	0.0
Turkey	6.6	8.7	4.5	6.6	8.7	4.5	0.0	0.0	0.0
United Kingdom	10.0	10.8	9.3	8.5	9.1	7.9	3.0	3.4	2.7
United States	24.9	24.3	25.6	20.4	20.4	20.4	9.1	7.8	10.4
West Germany	19.1	23.1	14.9	19.1	23.1	14.9	0.0	0.0	0.0

— Data not available.

NOTE: See supplemental note to Indicator 8 on page 92 for details on indicator calculation for Belgium, France, Italy, the Netherlands, Portugal, Sweden, and the United Kingdom. See note in the appendix on page 106 for an explanation of enrollment reference groups.

SOURCE: Organization for Economic Co-operation and Development, Center for Educational Research and Innovation, International Indicators Project, 1992.

Table 8b: Public and private university enrollment per 100 persons in the population aged 18 to 24, by enrollment status, sex, and state: 1988

State	Full-time equivalents			Full-time			Part-time		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Alabama	23.5	22.9	24.1	19.9	19.6	20.2	7.1	6.5	6.9
Alaska	15.0	13.1	17.1	10.3	9.5	11.2	9.4	7.2	11.8
Arizona	21.8	22.5	21.1	17.9	18.8	16.9	7.9	7.5	7.6
Arkansas	21.7	20.6	22.8	18.9	18.5	19.3	5.7	4.2	6.1
California	19.8	19.2	20.5	16.3	15.9	16.7	7.0	6.5	7.3
Colorado	30.1	29.9	30.3	25.5	25.9	25.1	9.2	8.0	9.8
Connecticut	27.8	26.2	29.4	20.8	20.3	21.4	14.0	11.9	13.9
Delaware	32.1	28.8	35.2	26.1	23.8	28.4	11.9	10.0	13.5
District of Columbia	97.3	100.1	94.9	74.1	76.1	72.4	46.4	48.0	47.7
Florida	15.8	16.3	15.3	12.2	12.8	11.5	7.3	6.9	7.3
Georgia	19.5	19.0	20.1	16.3	16.2	16.4	6.4	5.4	6.4
Hawaii	20.9	18.7	23.7	16.8	15.0	19.1	8.2	7.5	9.0
Idaho	25.5	26.0	25.0	20.1	21.4	18.9	10.7	9.2	11.4
Illinois	23.8	24.1	23.4	19.2	20.1	18.3	9.1	8.0	9.3
Indiana	29.7	29.4	30.0	24.1	24.8	23.4	11.2	9.2	12.3
Iowa	33.0	34.1	31.9	28.6	30.3	26.9	8.8	7.6	9.1
Kansas	31.5	30.7	32.2	25.6	26.1	25.1	11.6	9.2	11.6
Kentucky	23.2	21.4	25.0	18.7	18.0	19.4	9.1	6.9	9.6
Louisiana	27.5	26.3	28.7	23.7	23.3	24.1	7.6	5.9	7.9
Maine	24.9	22.4	27.5	19.0	18.3	19.8	11.8	8.2	14.6
Maryland	21.8	20.8	22.8	16.5	16.0	16.9	10.6	9.5	11.1
Massachusetts	41.8	40.9	42.6	33.8	33.8	33.8	15.9	14.1	16.6
Michigan	25.5	24.8	26.2	20.5	20.6	20.5	9.9	8.3	10.5
Minnesota	31.7	30.7	32.7	24.7	24.5	24.8	14.1	12.4	15.2
Mississippi	17.7	17.3	18.1	15.6	15.5	15.7	4.2	3.5	4.4
Missouri	29.0	29.2	28.9	22.9	23.8	22.1	12.2	10.8	13.2
Montana	33.1	33.8	32.3	28.4	29.7	27.0	9.4	8.2	10.1
Nebraska	34.8	33.9	35.8	28.0	28.6	27.4	13.7	10.7	14.4
Nevada	16.5	16.0	17.0	10.9	11.3	10.6	11.1	9.6	11.8
New Hampshire	31.3	30.0	32.6	25.5	25.2	25.8	11.6	9.4	12.7
New Jersey	18.2	17.9	18.4	13.3	13.6	13.1	9.6	8.6	10.1
New Mexico	24.7	24.7	24.8	19.5	20.3	18.7	10.4	8.8	10.8
New York	31.3	30.2	32.3	24.6	24.6	24.6	13.3	11.1	13.6
North Carolina	22.7	20.9	24.6	19.8	18.5	21.1	5.8	4.8	5.9
North Dakota	36.4	37.0	35.7	32.8	33.9	31.7	7.1	6.2	8.5
Ohio	27.4	27.8	27.0	22.8	23.7	21.9	9.2	8.2	9.5
Oklahoma	27.5	27.2	27.8	22.6	22.9	22.3	9.8	8.6	10.2
Oregon	26.4	27.1	25.7	21.9	23.1	20.6	9.1	8.0	9.1
Pennsylvania	29.4	29.4	29.4	24.6	25.2	24.0	9.7	8.4	10.5
Rhode Island	44.8	44.4	45.3	37.1	37.5	36.7	15.4	13.7	16.1
South Carolina	20.9	19.1	22.8	17.9	17.0	18.9	6.0	4.2	5.4
South Dakota	35.3	33.4	37.4	29.4	29.0	29.8	11.8	8.7	14.0
Tennessee	23.4	23.1	23.7	19.7	19.9	19.4	7.4	6.3	7.5
Texas	21.3	21.3	21.3	17.4	17.8	17.0	7.8	7.0	7.8
Utah	35.8	39.5	32.3	28.6	32.1	25.3	14.4	14.7	14.0
Vermont	36.8	34.7	38.8	32.0	31.4	32.6	9.5	6.6	10.1
Virginia	23.8	21.6	26.1	20.3	18.9	21.7	7.1	5.5	7.2
Washington	20.1	19.3	20.9	17.9	17.4	18.5	4.3	3.8	4.6
West Virginia	27.2	26.3	28.2	22.1	22.6	21.7	10.2	7.4	11.1
Wisconsin	31.7	30.8	32.5	27.3	27.2	27.4	8.8	7.3	9.4
Wyoming	18.2	18.8	17.5	16.1	17.1	15.1	4.1	3.4	4.8

NOTE: See supplemental note to Indicator 8 on page 92 for details on indicator calculation for the District of Columbia.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, 1988–89. U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Series P-25, No. 1058, State Population and Household Estimates: July 1, 1989.

OUTCOMES INDICATORS

Indicator 9: Mathematics achievement (experimental)

Goal 4 of the National Education Goals states that by the end of this decade, U.S. students will be first in the world in science and mathematics achievement. This goal is based on the belief that our nation's ability to compete globally rests upon strong science and mathematics skills and on our ability to apply those skills to emerging technologies. In as few as five years from now, the youth of today will be competing in the global marketplace. They will depend on the mathematics learned in this decade to succeed in the complex business and technological environment of the future. This indicator compares the average and percentile scores of 13-year-old students in selected countries to 8th graders from public schools in selected U.S. states.

- **Thirteen-year-olds from the United States scored lower on average than students of the same age in other large countries, except Spain, in 1991.**

- **Average mathematics proficiency among 13-year-old students in the United States was 23 scale points below their Taiwanese counterparts. This is more than half of the difference between 9- and 13-year-olds in the United States (40 points),[1] suggesting that U.S students at age 13 may be performing at levels similar to Taiwanese students approximately 2 years younger.**

- **Over 25 percent of 13-year-olds in Taiwan and Korea scored above 300 in 1991, while about 10 percent of students the same age scored that high in the United States. However, in 10 states 25 percent or more of U.S. 8th grade public school students (who are generally older than 13 years) scored above this level in 1992.**

- **The range in average mathematics proficiency across states was similar to the range across countries. Average proficiency scores for public 8th-grade students in 1992 ranged from 246 in Mississippi to over 280 in Iowa, North Dakota, and Minnesota. Average scores for 13-year-olds students in 1991 ranged from 246 in Jordan to over 280 in Taiwan and Korea.**

- **There was greater variation in the mathematics proficiency of students within countries and states than across countries and states. For example, among 8th grade public students the difference between the 10th and 90th percentile was 90 scale points in Mississippi, compared to a difference in average proficiency of 39 between Taiwan and Mississippi.**

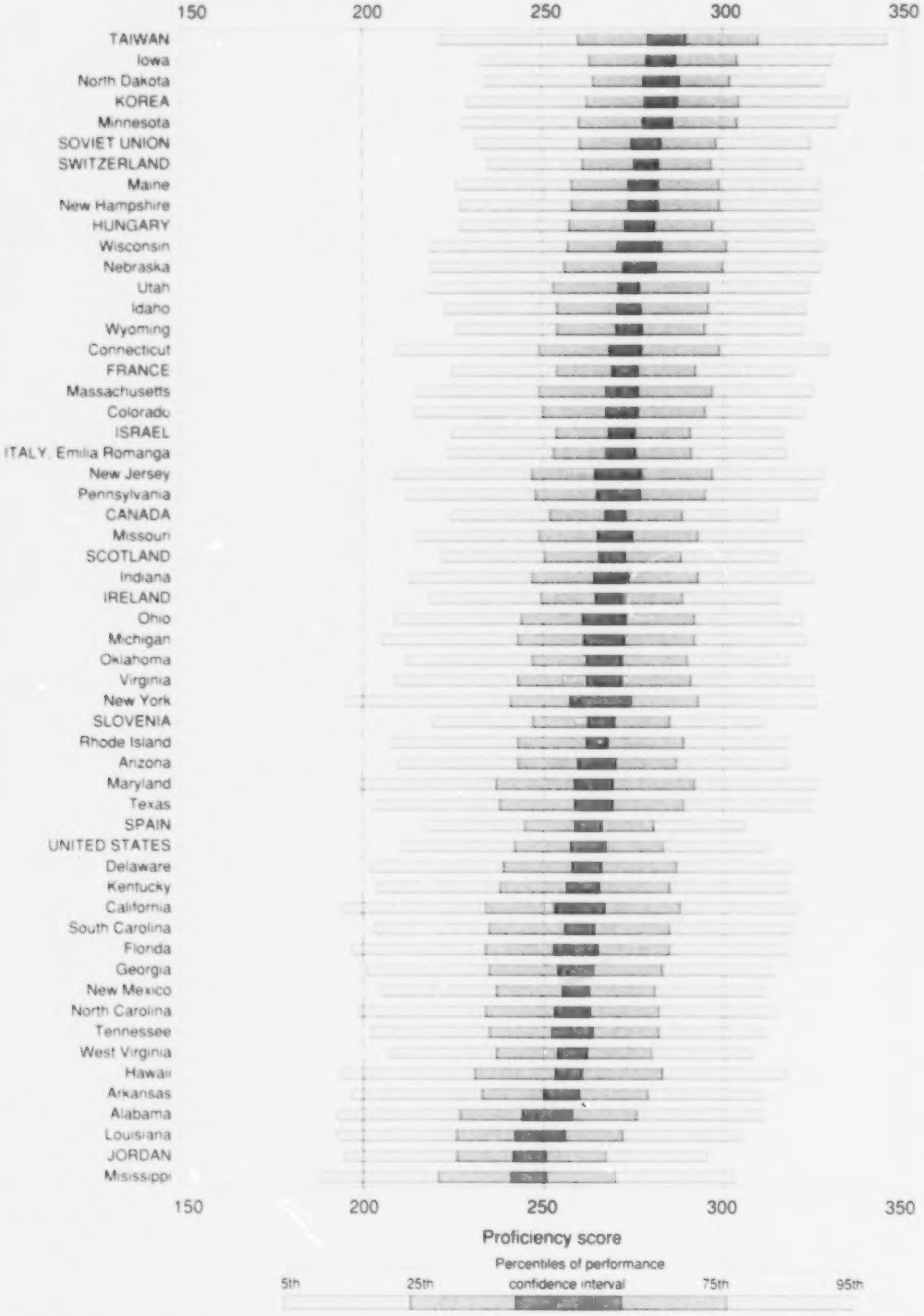
Notes on Interpretation:

In the 1991 International Assessment of Educational Progress (IAEP), 20 countries assessed the mathematics achievement of 13-year-olds. The country-level data provided in table 9a are the result of a study linking the 1991 IAEP scores to the 1992 National Assessment of Educational Progress (NAEP) scores. Scores were projected for IAEP participants onto the NAEP scale. The state scores presented in table 9b for public 8th-grade students are from the 1992 NAEP Trial State Assessment. Caution should be exercised when comparing results across countries and states, for the age distribution of 8th graders tested in the states is likely to be older than the 13-year-olds tested in IAEP. Furthermore, the results of a linking study of this type are heavily dependent on the equating method used. For these reasons, this indicator is classified as *experimental*. See the supplemental note to Indicator 9 on page 93 for a discussion of these issues.

---

[1] U.S. Department of Education, National Center for Education Statistics, ***The Condition of Education,*** 1993, Indicator 13.

Figure 9: Proficiency scores for 13-year-olds in countries and public 8th-grade students in states in mathematics: 1991 (other countries) or 1992 (U.S. and states)



NOTE: The center darkest box indicates a confidence interval around the average mathematics proficiency for the country or state calculated as the mean plus or minus two times the standard error. Test scores range from 0 to 500.

SOURCE: Educational Testing Service, IAEP/NAEP Cross-linking Study, 1993; U.S. Department of Education, National Center for Education Statistics, *NAEP 1992 Mathematics Report Card for the Nation and the States,* 1993.

Table 9a: Predicted proficiency scores for 13-year-olds in mathematics, by country: 1991

Country	Average proficiency	Percentile score 5th	10th	25th	50th	75th	90th	95th
Canada[1]	270	224	235	252	270	289	305	315
France	273	225	236	254	273	292	309	319
Hungary	277	227	239	257	278	297	315	326
Ireland	269	218	230	249	269	289	306	316
Israel[2]	272	225	236	254	273	291	307	317
Italy, Emilia Romanga[3]	272	224	235	253	272	291	308	317
Jordan	246	195	207	226	247	267	285	296
Korea	283	229	242	262	284	304	323	335
Scotland	269	222	233	250	270	288	305	315
Slovenia	266	219	230	247	266	285	302	311
Soviet Union[4]	279	231	242	260	279	298	315	324
Spain[5]	263	218	228	245	263	281	297	306
Switzerland[6]	279	235	244	261	279	297	313	322
Taiwan	285	222	236	260	286	310	332	345
United States[7]	262	211	223	242	263	283	301	312

[1] Nine out of 10 provinces.

[2] Hebrew-speaking schools.

[3] Combined school and student participation rate is below .80 but at least .70; interpret with caution because of possible nonresponse bias.

[4] Fourteen out of 15 republics; Russian-speaking schools.

[5] All regions except Cataluña; Spanish-speaking schools.

[6] Fifteen out of 26 cantons.

[7] Eighth-graders took the test and not all were 13-years old.

NOTE: Only countries in which comprehensive student populations were represented by the test-taking sample are included. Test administrations in Brazil, China, England, and Portugal either excluded groups or had low participation rates. See supplemental note to Indicator 9 on page 93 for a description of the IAEP/NAEP linking study.

Mathematics Proficiency Scale has a range from 0 to 500:

Level 150: Simple arithmetic facts.
Level 200: Beginning skills and understandings.
Level 250: Numerical operations and beginning problem solving.
Level 300: Moderately complex procedures and reasoning.
Level 350: Multi-step problem solving and algebra.

SOURCE: Educational Testing Service, IAEP/NAEP Cross-linking Study, 1993.

Table 9b: Proficiency scores for 8th-grade students in public schools in mathematics, by state: 1992

State	Average proficiency	Percentile score						
		5th	10th	25th	50th	75th	90th	95th
Alabama	251	193	206	227	251	276	299	311
Arizona	265	210	222	243	265	287	307	318
Arkansas	255	197	211	233	256	279	299	311
California	260	194	209	234	261	288	309	321
Colorado	272	214	228	250	273	295	313	323
Connecticut	273	209	224	249	275	299	318	329
Delaware	262	202	216	239	262	287	307	319
District of Columbia	234	176	189	209	233	257	280	296
Florida	259	197	210	234	260	285	306	318
Georgia	259	201	214	235	259	283	303	314
Hawaii	257	194	208	231	257	283	305	317
Idaho	274	223	235	254	275	296	313	323
Indiana	269	213	225	247	270	293	313	325
Iowa	283	233	244	263	284	304	321	330
Kentucky	261	204	216	238	262	285	305	318
Louisiana	249	193	205	226	250	272	293	305
Maine	278	226	239	258	279	299	316	327
Maryland	264	199	213	237	265	292	314	326
Massachusetts	272	215	229	249	273	297	316	325
Michigan	267	205	220	243	268	292	311	323
Minnesota	282	228	240	260	283	304	322	332
Misissippi	246	188	201	221	245	270	291	303
Missouri	270	215	228	249	272	293	312	322
Nebraska	277	219	234	256	279	300	317	327
New Hampshire	278	227	238	258	278	299	316	327
New Jersey	271	209	222	247	273	297	317	328
New Mexico	259	205	217	237	259	281	300	312
New York	266	196	213	241	268	293	314	326
North Carolina	258	199	212	234	258	282	303	315
North Dakota	283	234	245	264	284	302	318	328
Ohio	267	209	222	244	269	292	310	322
Oklahoma	267	212	226	247	268	290	308	318
Pennsylvania	271	212	225	248	272	295	314	326
Rhode Island	265	208	221	243	267	289	307	318
South Carolina	260	203	215	235	259	285	307	319
Tennessee	258	202	214	235	258	282	302	312
Texas	264	203	216	238	264	289	312	325
Utah	274	218	232	253	275	296	314	324
Virginia	267	209	221	243	267	291	313	325
West Virginia	258	207	218	237	258	280	298	308
Wisconsin	277	219	233	257	279	301	318	328
Wyoming	274	226	236	254	275	295	312	322

NOTE: The states of Alaska, Illinois, Kansas, Montana, Nevada, Oregon, South Dakota, Vermont, and Washington did not participate.

Mathematics Proficiency Scale has a range from 0 to 500:
Level 150: Simple arithmetic facts.
Level 200: Beginning skills and understandings.
Level 250: Numerical operations and beginning problem solving.
Level 300: Moderately complex procedures and reasoning.
Level 350: Multi-step problem solving and algebra.

SOURCE: U.S. Department of Education, National Center for Education Statistics, *NAEP 1992 Mathematics Report Card for the Nation and States*, 1993.

Indicator 10: Higher education completion

The ratios of young people completing bachelors degrees in the United States and equivalent degrees in other highly industrialized countries provides an indication of the skill level of entrants into the U.S. workforce as compared to its economic competitors. Even though some graduates migrate across states or nations after graduation, the ratio of college and university graduates to the local population at the graduation reference age (higher education completion ratio) is an indicator of the skill level of the young adult labor pool in a particular state or country.

- **In 1988, the higher education completion ratio ranged from under 8 in Austria, Italy, Switzerland, and Turkey, to over 25 in Canada, Japan, and the United States. Only Canada and the United States had ratios higher than 20 for both males and females.**

- **In general, most U.S. states had much higher completion ratios than those of OECD countries. Forty-five states had higher education completion ratios of 20 or higher, and 19 had ratios of at least 30. Only four OECD countries had higher education completion ratios as high as 20, and none had ratios as high as 30.**

- **The three states with the highest higher education completion ratios were Massachusetts, Vermont, and Rhode Island, whose ratios were 43, 47, and 50, respectively.**

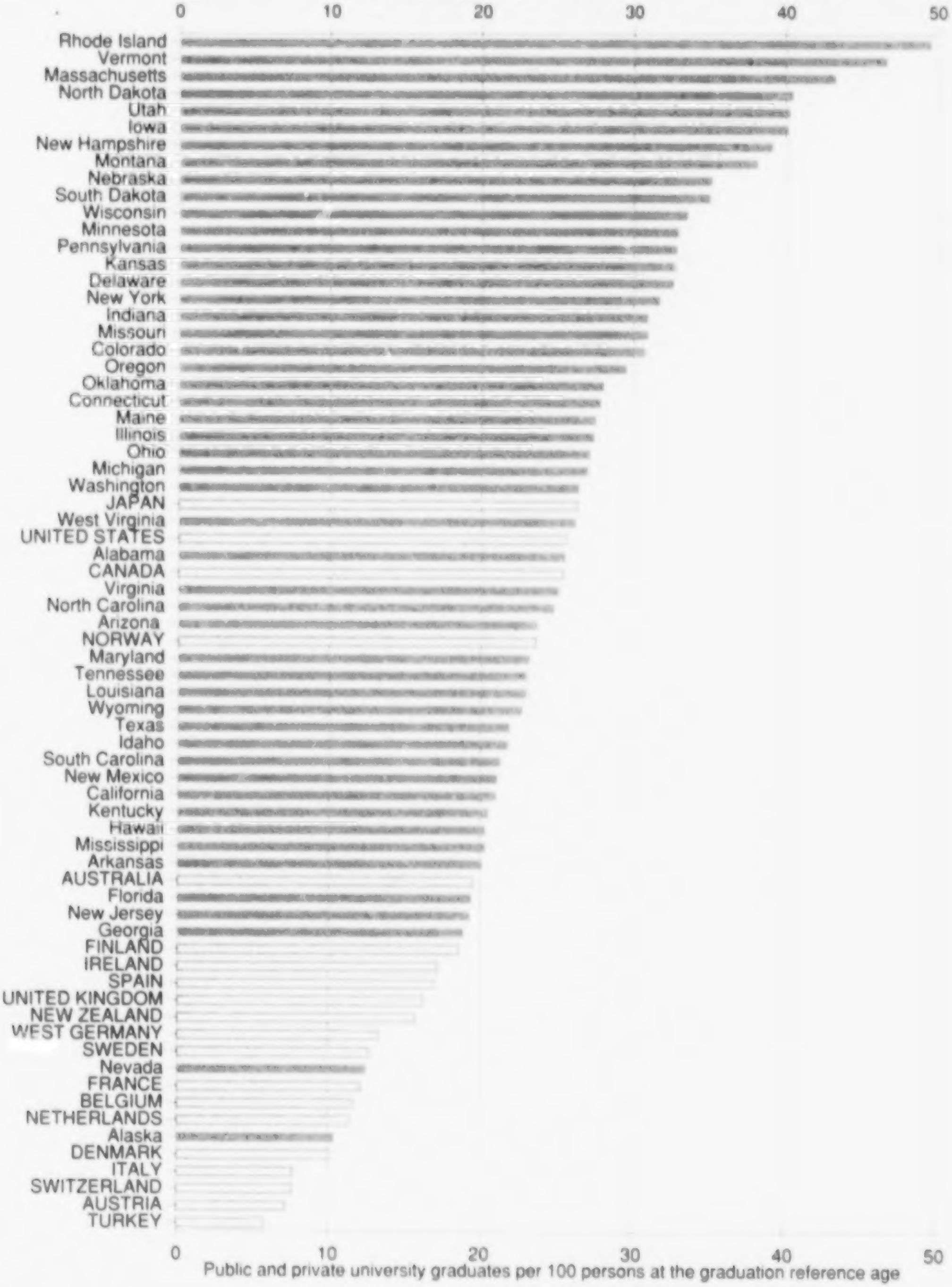
- **Only seven states had higher completion ratios for men than women. The opposite pattern held across OECD countries. Fourteen of the 20 countries had higher completion ratios for men than women.**

Notes on Interpretation

All students completing bachelor's degrees (or the equivalent) in a country or state's universities are included in the higher education completion figures. That includes students who had lived in other countries or states before attending their university or who moved to other countries or states after attending their university. Some states and countries, particularly those with a relatively large public university system and many private universities, may have a surplus of "in-migrant" students. Other states and countries, particularly those with a relatively small public university system and few private universities, may have a deficit of "out-migrant" students. Among OECD countries, Luxembourg is notable for a deficit of out-migrant students, as most of its university students attend universities in neighboring countries.

A completion ratio should *not* be interpreted as a completion *rate*. Completion ratios allow comparisons across states and nations by standardizing the number of graduates at a particular education level to the size of the population in an age group typical for graduation at that level. It is not, however, an estimate of the percentage of that age group who have graduated. See note on page 106 in the appendix for a discussion of the calculation of this indicator.

Figure 10: **Public and private university graduates per 100 persons at the graduation reference age, by country and state: 1988**



SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, 1988-89. U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Series P-25, No. 1058, State Population and Household Estimates: July 1, 1989. Organization for Economic Co-operation and Development, Center for Educational Research and Innovation, International Indicators Project, 1992.

Table 10a: Public and private university graduates per 100 persons at the graduation reference age and degrees, by sex and country: 1988

OECD country	Name of degree	Graduates per 100 persons Total	Male	Female
Australia	Bachelor	19.5	18.6	20.4
Austria	Diplom	7.2	8.1	6.3
Belgium	Licence	11.6	13.9	9.2
Canada	Bachelor	25.4	23.3	27.7
Denmark	Bachelor	10.1	12.6	7.4
Finland	Master	18.6	20.6	16.6
France	Licence	12.1	12.1	12.0
Ireland	First Degree	17.2	19.2	15.0
Italy	Laurea	7.7	8.0	7.4
Japan	Gakushi	26.3	37.7	14.4
Netherlands	Doctoraal examen	11.4	14.2	8.5
New Zealand	Undergraduate Bachelor	15.7	16.8	14.5
Norway	Master and Cand. mag.	23.6	16.3	31.4
Spain	Diplomado/Licenciado	17.0	14.0	20.1
Sweden	Undergraduate Bachelor	12.7	10.8	14.8
Switzerland	Licence	7.6	10.1	5.0
Turkey	Lisans	5.8	7.4	4.1
United Kingdom	Bachelor	16.3	17.0	15.5
United States	Bachelor	25.6	24.4	26.9
West Germany	Staats-Diplomprüfung	13.3	16.1	10.3

NOTE: See supplemental note to Indicator 10 on page 95 for details on indicator calculation for Denmark, Finland, France, Norway, Spain, and Sweden. See note in the appendix on page 106 for an explanation of graduation reference age.

SOURCE: Organization for Economic Co-operation and Development, Center for Educational Research and Innovation, International Indicators Project, 1992.

Table 10b: Public and private university graduates per 100 persons aged 22-years-old, by sex and state: 1988

State	Total	Male	Female
Alabama	25.5	24.6	26.4
Alaska	10.4	9.0	12.1
Arizona	23.7	23.9	23.6
Arkansas	20.1	18.4	21.7
California	21.0	19.4	22.7
Colorado	30.7	29.9	31.5
Connecticut	27.8	25.4	30.2
Delaware	32.6	27.0	37.9
District of Columbia	72.8	70.0	75.1
Florida	19.4	19.4	19.4
Georgia	18.9	17.6	20.1
Hawaii	20.3	17.1	24.4
Idaho	21.8	22.9	20.6
Illinois	27.4	27.2	27.6
Indiana	30.9	31.3	30.4
Iowa	40.1	39.2	41.0
Kansas	32.7	31.7	33.8
Kentucky	20.5	18.5	22.5
Louisiana	23.0	22.1	24.0
Maine	27.5	25.0	30.0
Maryland	23.2	20.7	25.6
Massachusetts	43.2	40.0	46.2
Michigan	27.0	26.1	27.9
Minnesota	32.9	30.9	34.9
Mississippi	20.3	18.7	21.9
Missouri	30.9	31.0	30.8
Montana	38.1	39.3	36.9
Nebraska	35.1	32.3	37.8
Nevada	12.5	12.0	13.1
New Hampshire	39.1	37.1	41.0
New Jersey	19.3	18.6	19.9
New Mexico	21.1	20.9	21.4
New York	31.7	30.5	32.9
North Carolina	24.8	22.1	27.7
North Dakota	40.4	40.3	40.4
Ohio	27.1	26.8	27.4
Oklahoma	28.0	27.8	28.2
Oregon	29.5	30.3	28.8
Pennsylvania	32.8	31.7	33.9
Rhode Island	49.5	47.2	51.8
South Carolina	21.3	19.1	23.5
South Dakota	35.0	33.9	36.2
Tennessee	23.0	22.6	23.3
Texas	21.9	21.2	22.6
Utah	40.2	44.8	35.5
Vermont	46.6	42.6	50.5
Virginia	25.1	21.5	29.1
Washington	26.4	24.9	28.0
West Virginia	26.2	25.6	26.7
Wisconsin	33.5	32.1	34.9
Wyoming	22.7	22.1	23.4

NOTE: See supplemental note to Indicator 10 on page 95 for details on indicator calculation for the District of Columbia.

SOURCE: National Center for Education Statistics, Integrated Postsecondary Education Data System, 1988-89. U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Series P-25, No. 1058, State Population and Household Estimates: July 1, 1989.

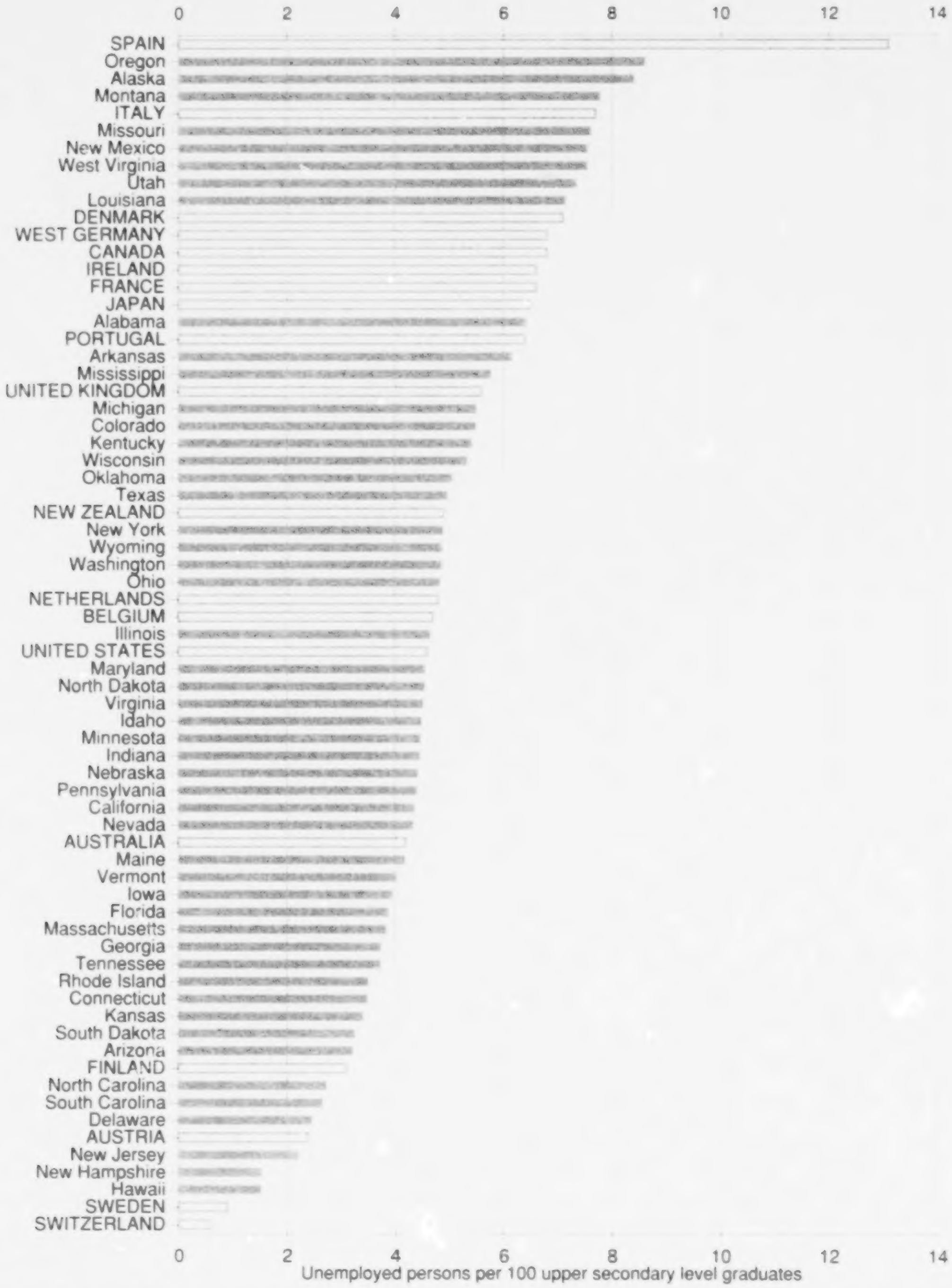
Indicator 11: Unemployment and education

This indicator illustrates the connection between educational attainment and unemployment. If unemployment rates decrease as the level of attainment increases, higher levels of education could be considered worthwhile investments. In some economies, however, this kind of positive relationship between educational attainment and employment may not be as strong as in others, or it may not exist at all. Not all countries or states require the same academic credentials from their workforces. Moreover, even people with high levels of education and training may not fare well in the job market if there is not a current demand for their particular skills.

- **In most OECD countries in 1988, lower unemployment rates were associated with increasing levels of educational attainment. In the United States, the unemployment rate for people who completed lower secondary education but not high school (9.1 percent) was almost double that for those who completed high school (4.6 percent). A large difference in unemployment rates between these two education levels (lower and upper secondary) also existed in West Germany (7 percentage points), but was not as large in France (4 percentage points), Canada (3 percentage points), or Japan (0.5 percentage points). Italy showed a slight difference in the opposite direction, with unemployment about 1 percentage point higher for those completing the upper secondary level of education.**

- **The four U.S. states with largest populations — California, New York, Texas, and Florida — had unemployment rates between 1.8 and 3.1 for university graduates. All four states had lower unemployment rates for university graduates than did Australia, Canada, Denmark, West Germany, Italy, the Netherlands, or Spain, but all had higher rates than Austria, Finland, Sweden, or Switzerland. Japan's unemployment rate for university graduates was 2.3 percent, the United Kingdom's 2.4, and France's 3.0.**

Figure 11: **Unemployment rate among those who have completed an upper secondary level of education, by country and state: 1988**



SOURCE: U.S. Department of Commerce, Bureau of the Census, March 1989 Current Population Survey. Organization for Economic Co-operation and Development, Center for Educational Research and Innovation, International Indicators Project, 1992.

Table 11a: Unemployment rates for various levels of educational attainment for 25- to 64-year olds, by sex and country: 1989

	Total						
OECD country	Total	Male	Female	Preprimary –lower secondary	Upper secondary	Higher education (non-university)	Higher education (university)
Australia	5.4	5.1	6.0	7.3	4.2	4.6	3.7
Austria	2.7	2.3	3.1	3.6	2.4	—	1.1
Belgium	7.5	4.7	12.2	11.1	4.7	2.7	2.0
Canada	6.7	6.2	7.3	10.0	6.8	5.0	3.6
Denmark[1]	8.3	7.5	9.3	12.1	7.1	4.0	3.4
Finland	3.0	3.1	3.0	4.1	3.1	1.6	1.7
France	8.1	6.1	10.8	11.0	6.6	3.4	3.0
Ireland	13.9	17.1	6.4	20.9	6.6	3.9	2.6
Italy	6.6	3.9	11.7	6.4	7.7	—	4.8
Japan[2]	5.9	2.8	10.0	7.0	6.5	7.7	2.3
Netherlands[3]	6.5	4.4	10.2	9.7	4.8	4.6	5.0
New Zealand[3]	6.0	6.4	5.4	8.1	4.9	5.1	2.9
Portugal	6.0	6.0	6.0	6.0	6.4	6.0	6.1
Spain	12.9	9.9	19.3	13.3	13.1	—	10.7
Sweden	1.0	1.1	1.0	1.4	0.9	0.9	1.0
Switzerland	0.8	0.2	1.6	1.5	0.6	0.3	0.8
United Kingdom	6.4	6.4	6.4	9.8	5.6	2.7	2.4
United States	4.4	4.7	4.0	8.9	4.6	3.3	2.2
West Germany	7.3	5.8	9.6	13.8	6.8	3.7	4.5

— Not available.

[1] 1988 data.

[2] 1987 data.

[3] 1990 data.

NOTE: See supplemental note to Indicator 11 on page 96 for details on calculation of the rates for Austria, Germany, Italy, the Netherlands, Spain, and the United States.

SOURCE: Organization for Economic Co-operation and Development, Center for Educational Research and Innovation, International Indicators Project, 1992.

Table 11b: Unemployment rates for various levels of educational attainment for 25- to 64-year olds, by sex and state: 1989

State	Total	Male	Female	Preprimary –lower secondary	Upper secondary	Higher education (non-university)	Higher education (university)
Alabama	5.6	5.5	5.8	7.8	6.4	2.0	2.8
Alaska	6.7	7.0	6.3	—	8.4	—	—
Arizona	4.8	5.6	3.7	14.0	3.2	4.1	2.8
Arkansas	7.7	7.9	7.5	15.6	6.2	5.6	4.2
California	4.0	3.7	4.4	7.4	4.4	2.7	2.7
Colorado	5.3	5.0	5.5	19.4	5.5	1.3	2.8
Connecticut	3.3	3.0	3.5	2.6	3.5	2.6	3.5
Delaware	2.2	3.4	0.6	—	2.5	—	—
District of Columbia	2.4	1.6	3.2	—	3.1	—	1.1
Florida	4.1	3.8	4.5	8.9	3.9	3.2	2.1
Georgia	4.6	4.3	4.8	8.8	3.7	6.2	1.5
Hawaii	2.3	1.8	3.0	—	1.5	4.0	2.5
Idaho	5.2	6.5	3.5	11.9	4.5	—	2.7
Illinois	5.4	5.0	5.9	13.2	4.7	6.1	2.4
Indiana	3.9	4.2	3.6	7.2	4.5	1.7	1.4
Iowa	3.1	3.1	3.1	4.6	4.0	1.2	1.2
Kansas	3.2	4.3	1.9	6.2	3.4	4.0	1.6
Kentucky	4.9	5.6	4.0	9.6	5.4	0.0	1.7
Louisiana	7.0	8.6	5.1	14.7	7.1	5.6	0.8
Maine	3.1	2.9	3.4	3.9	4.2	1.2	1.3
Maryland	3.8	4.5	2.9	2.7	4.6	4.6	2.9
Massachusetts	3.3	3.8	2.5	5.4	3.8	3.2	1.9
Michigan	5.6	7.2	3.6	15.9	5.5	2.5	1.9
Minnesota	3.6	4.3	2.6	2.5	4.5	1.3	3.0
Mississippi	6.2	6.1	6.3	11.4	5.8	4.1	3.3
Missouri	5.3	6.4	4.0	5.4	7.6	6.2	0.9
Montana	7.2	7.5	6.8	—	7.8	—	2.9
Nebraska	3.6	3.3	3.9	2.8	4.4	2.6	2.2
Nevada	4.3	6.3	1.9	9.6	4.3	2.6	2.2
New Hampshire	1.9	1.6	2.4	1.9	1.5	2.3	2.4
New Jersey	3.0	3.7	2.0	9.1	2.2	2.8	1.9
New Mexico	5.4	6.4	4.1	8.3	7.6	4.5	0.3
New York	3.9	4.2	3.5	5.8	4.9	3.3	1.8
North Carolina	2.7	2.3	3.2	4.4	2.7	2.2	1.5
North Dakota	3.8	5.9	1.1	—	4.6	2.9	0.8
Ohio	4.5	5.9	2.8	9.4	4.8	1.7	2.5
Oklahoma	5.8	4.8	7.0	17.6	5.1	2.6	2.0
Oregon	7.0	7.9	5.9	12.1	8.6	4.4	4.4
Pennsylvania	3.8	4.2	3.3	10.3	4.4	1.3	0.5
Rhode Island	4.0	4.2	3.8	3.9	3.5	6.1	4.2
South Carolina	2.7	3.2	2.1	5.6	2.7	3.2	0.0
South Dakota	3.1	3.1	3.2	—	3.3	—	—
Tennessee	3.6	4.4	2.6	5.6	3.7	1.8	2.2
Texas	5.6	5.6	5.6	10.7	5.0	5.8	3.1
Utah	5.0	4.3	5.9	—	7.3	3.7	1.6
Vermont	3.6	4.1	3.0	—	4.0	2.8	1.7
Virginia	3.5	3.2	3.9	8.1	4.5	0.0	1.6
Washington	5.0	4.6	5.6	12.8	4.9	4.0	4.0
West Virginia	6.3	7.6	4.2	9.0	7.6	5.3	0.0
Wisconsin	5.2	6.0	4.2	13.1	5.3	3.8	1.9
Wyoming	4.1	5.7	2.1	—	4.9	3.5	1.2

— Not available.

SOURCE: U.S. Department of Commerce, Bureau of the Census, March 1989 Current Population Survey.

Indicator 12: Educational attainment of the population

The percentage of the population completing secondary and higher education in U.S. states and other highly industrialized countries provides an indication of the skill level of the U.S. workforce compared to its economic competitors. Completion levels reflect both the availability of education in a country and the extent to which completion of certain levels of education is typical. Because many working-age adults completed their education years ago, the indicator is influenced by the levels of development of an education system over time. Countries or states wherein education systems have undergone major expansions only in recent years will still have a large proportion of relatively uneducated adults. However, this indicator does include those who did not complete their education during the typical school-going years, but reentered the system as adults.[2]

- **Among OECD countries in 1989, the United States had the highest percentage of people who had completed at least an upper secondary education — 81 percent. Seventy-eight percent of West Germans between the ages of 25 and 64 completed at least this level of education. For the other G-7 countries, the proportions ranged from 26 to 71 percent.**

- **The United States also had, by far, the highest proportion of people with a university education in its adult population. Its 23 percent was 8 percentage points higher than the proportion in Canada or the United Kingdom. Three of the larger OECD countries — France, West Germany, and Italy — had proportions of 10 percent or less.**

- **The states with the lowest proportions of people who completed the equivalent of high school were Alabama (71 percent) and Tennessee (72 percent). Those states' proportions, however, were still higher than those of 16 of the 20 OECD countries.**

Notes on Interpretation:

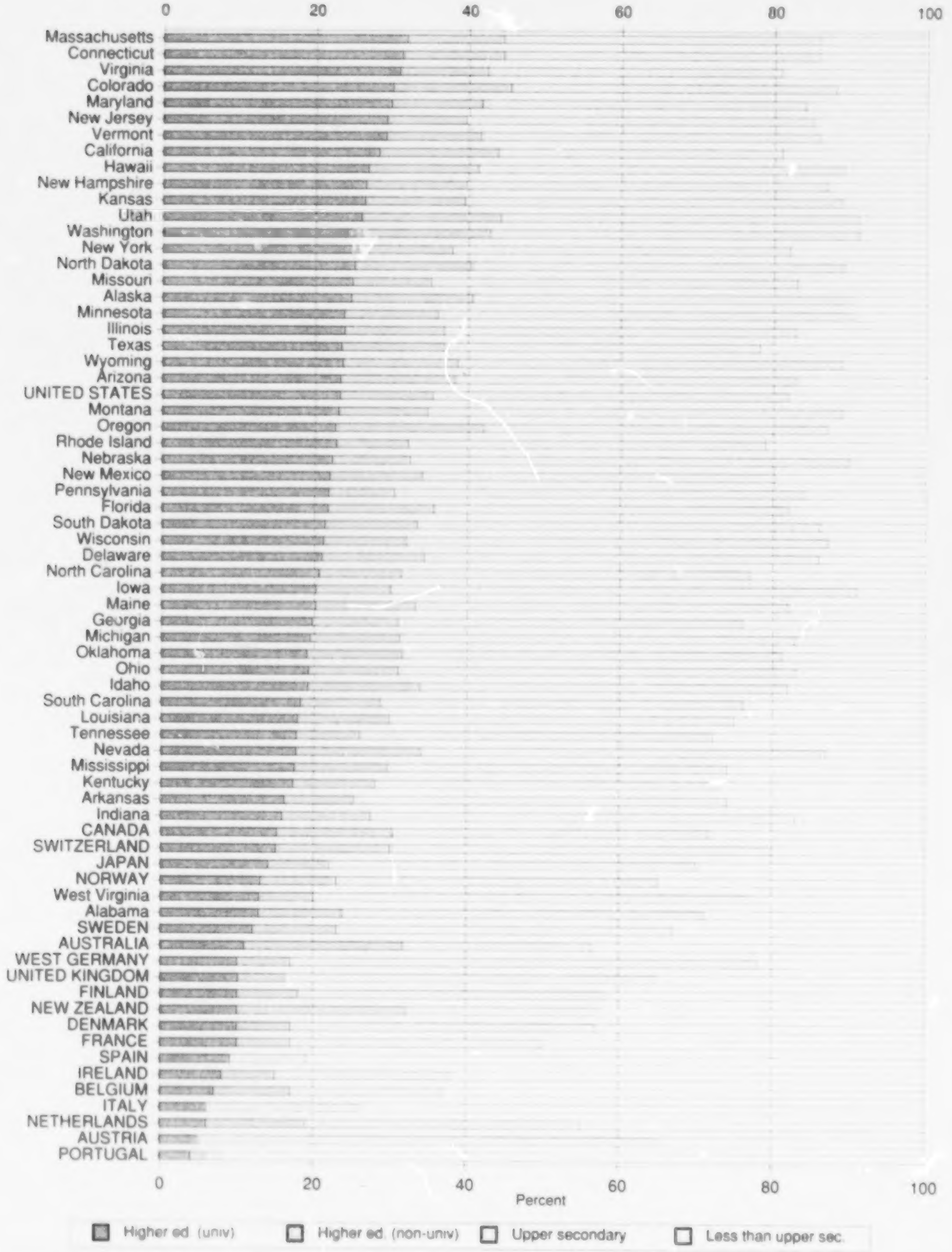
Although the educational attainment of a population is an indicator of its current skill level, it is not necessarily a measure of success in educating a large proportion of the population. WIthin the 25–64-year-old age group, there may be many who have moved out of the country or state where they received their education. Thus, particularly in some U.S. states, large segments of the resident population may have been educated elsewhere.

There are marked differences among countries with respect to whether certain programs are classified as belonging to the university, non-university, or upper secondary sector. For example, in some countries, programs leading to qualifications in teaching and nursing are considered to be university programs; in others, they are non-university programs. Furthermore, some programs that are begun subsequent to the completion of general secondary education are classified as non-university higher education in parts of Canada and the United States, whereas they are defined as upper secondary education in most other countries.

---

[2] It would be informative to examine educational attainment over a narrower age range, such as 25 to 34, and such a breakdown will be included in future editions of ***Education in States and Nations***. However, currently available state data do not permit this. For international data on the 25- to 34-year-old age group, see page 64 of the 1993 ***Condition of Education***.

Figure 12: **Percentage of the population who have attained various levels of education, by country and state: 1989**



SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data Systems, 1988-89. U.S. Department of Commerce, Bureau of the Census, March 1989 Current Population Survey. Organization for Economic Co-operation and Development, Center for Educational Research and Innovation, International Indicators Project, 1992.

Table 12a: Percentage of the population aged 25 to 64, by highest level of education attained and country: 1989

OECD country	Less than lower secondary	Lower secondary	Upper secondary	Higher education (non-university)	Higher education (university)	Total
Australia	14	30	25	21	11	100
Austria	—	35	60	—	5	100
Belgium	33	30	20	10	7	100
Canada	14	14	41	15	15	100
Denmark[1]	—	43	40	7	10	100
Finland	0	42	40	8	10	100
France	24	26	33	7	10	100
Ireland	37	25	23	7	8	100
Italy	44	30	20	—	6	100
Japan[2]	—	30	48	8	14	100
Netherlands[3]	19	26	36	13	6	100
New Zealand[3]	33	10	25	22	10	100
Norway[3]	—	35	42	10	13	100
Portugal	89	4	2	2	4	100
Spain	67	13	10	—	9	100
Sweden	—	33	44	11	12	100
Switzerland	—	20	50	15	15	100
United Kingdom	—	35	48	6	15	100
United States	8	10	46	12	23	100
West Germany	—	22	61	7	10	100

— Not available.

[1] 1988 data.

[2] 1987 data.

[3] 1990 data.

NOTE: See supplemental note to Indicator 12 on page 97 for details on calculation of the percentages for Italy, Spain, the United Kingdom, and the United States, and for a discussion of the age range of the reference population.

SOURCE: Organization for Economic Co-operation and Development, Center for Educational Research and Innovation, International Indicators Project, 1992.

Table 12b: Percentage of the population aged 25 to 64, by highest level of education attained and state: 1989

State	Less than lower secondary	Lower secondary	Upper secondary	Higher education (non-university)	Higher education (university)	Total
Alabama	12	17	47	11	13	100
Alaska	5	5	49	16	25	100
Arizona	8	9	45	15	23	100
Arkansas	10	16	49	9	16	100
California	11	8	37	16	28	100
Colorado	3	9	43	16	30	100
Connecticut	6	8	41	13	31	100
Delaware	4	10	52	13	21	100
District of Columbia	8	14	31	9	39	100
Florida	7	11	46	14	22	100
Georgia	8	16	45	11	20	100
Hawaii	5	6	48	14	27	100
Idaho	8	10	48	15	19	100
Illinois	7	10	46	13	24	100
Indiana	4	13	56	12	16	100
Iowa	4	5	61	10	20	100
Kansas	3	8	49	13	26	100
Kentucky	13	14	44	11	17	100
Louisiana	10	15	45	12	18	100
Maine	9	9	49	13	20	100
Maryland	6	10	43	12	30	100
Massachusetts	6	8	41	13	32	100
Michigan	5	12	51	12	19	100
Minnesota	4	6	54	12	24	100
Mississippi	13	13	44	12	17	100
Missouri	7	10	48	10	25	100
Montana	4	7	54	12	23	100
Nebraska	3	7	57	10	22	100
Nevada	3	10	53	16	18	100
New Hampshire	5	8	47	13	27	100
New Jersey	6	9	46	10	29	100
New Mexico	10	10	46	12	22	100
New York	8	10	44	12	26	100
North Carolina	9	14	46	11	21	100
North Dakota	6	5	49	15	25	100
Ohio	4	13	52	12	19	100
Oklahoma	8	11	50	13	19	100
Oregon	3	10	45	20	23	100
Pennsylvania	5	11	54	9	22	100
Rhode Island	9	12	47	9	23	100
South Carolina	9	15	48	10	18	100
South Dakota	7	7	53	12	21	100
Tennessee	15	13	46	8	18	100
Texas	12	10	42	13	24	100
Utah	2	7	47	18	26	100
Vermont	5	9	44	12	29	100
Virginia	9	10	38	11	31	100
Washington	2	7	48	17	26	100
West Virginia	10	13	57	7	13	100
Wisconsin	4	9	55	11	21	100
Wyoming	3	8	50	15	24	100

SOURCE: U.S. Department of Commerce, Bureau of the Census, March 1989 Current Population Survey.

FINANCE INDICATORS

Indicator 13: Current *public* expenditure per student

Current public expenditure per student is a measure of public investment in each student in the education system. It is the part of current education expenditure that is financed from public sources divided by the number of full-time-equivalent students enrolled in the education system, including those enrolled in private schools. It reflects the general purchasing power (or standard of living) given up (through public sources) to support the education of each student. Variations in per student expenditure result from differences in national and state spending priorities, the cost of local educational resources relative to other goods, the size of the corresponding private education sector, and the wealth of a country or state.

- **Current public expenditure per student at the preprimary through secondary level in the United States was $3,843 in 1988. This was more than the $3,508 spent by Canada, and considerably more than per-student expenditures in the other G-7 countries — West Germany, Japan, France, Italy, and the United Kingdom.**

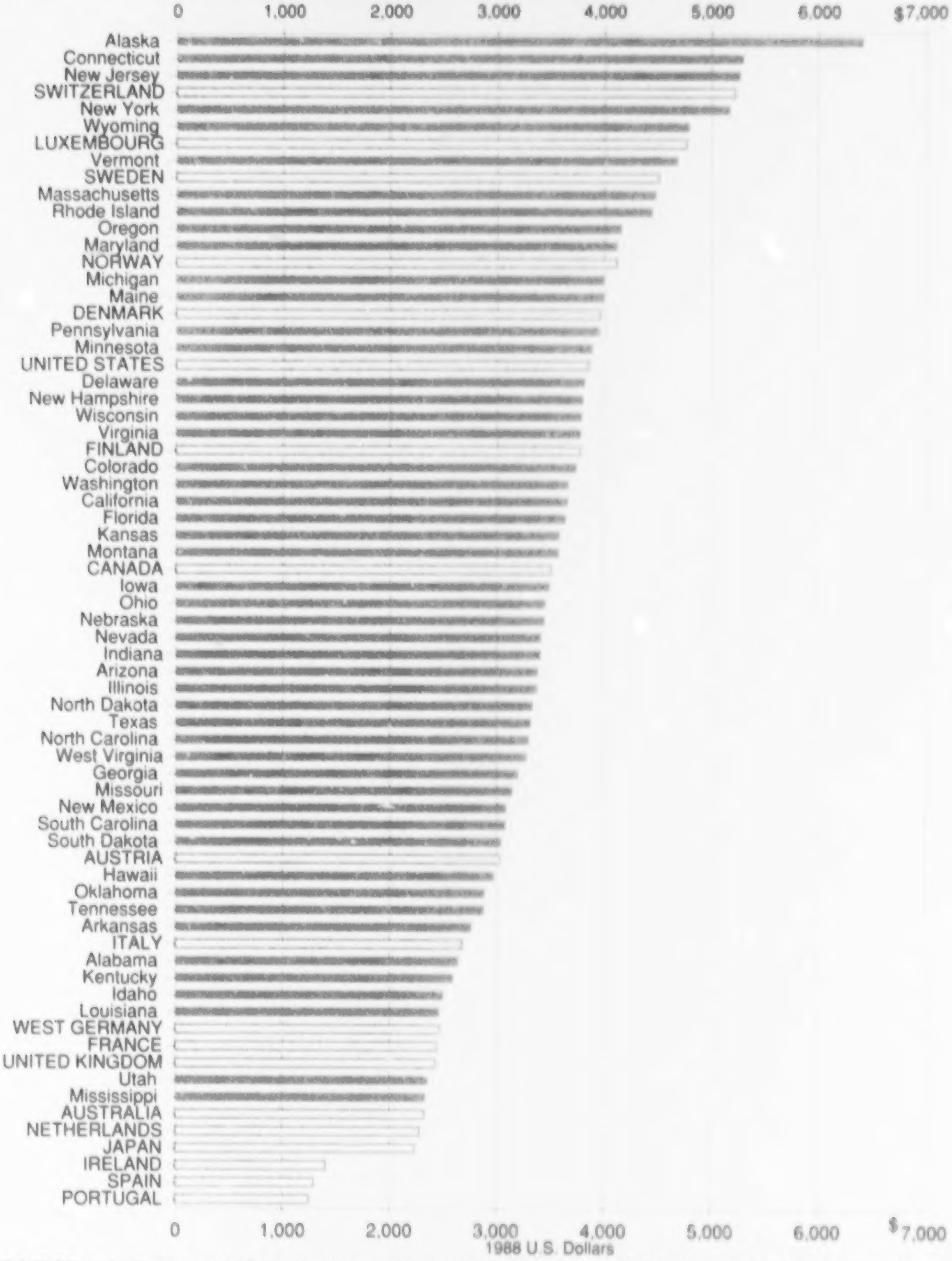
- **Whereas 9 of 19 OECD countries spent less than $2,500 per student from public sources at the preprimary through secondary level, the only states who spent below that level were Louisiana, Mississippi, and Utah.**

- **Alaska, Connecticut, and New Jersey spent more at the preprimary through secondary level than Switzerland, the OECD country with the highest per-student expenditure at that level.**

Notes on Interpretation:

In some countries, particularly the United States and Japan, a large portion of expenditure on higher education comes from private sources, which are not included in this indicator. See the supplemental note to Indicator 13 on page 98 for data on private higher education expenditure in certain countries.

Figure 13: **Current public expenditure per student on preprimary through secondary education, by country and state: 1988**



SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data Survey, 1988-89; and Schools and Staffing Survey, 1987-88. U.S. Department of Commerce, Bureau of the Census, 1990 Census of the Population. Organization for Economic Co-operation and Development, Center for Educational Research and Innovation, International Indicators Project, 1992. International Monetary Fund, Bureau of Statistics, *International Financial Statistics*, December, 1988.

Table 13a: Current public expenditure per student (in U.S. dollars), by level of education and country: 1988

OECD country	Preprimary–secondary	Higher education
Australia	$2,330	$6,119
Austria	3,035	5,371
Canada	3,508	7,109
Denmark	3,964	11,683
Finland	3,778	5,620
France	2,446	4,129
Ireland	1,409	4,615
Italy	2,683	4,007
Japan	1,978	2,042
Luxembourg	4,768	10,470
Netherlands	2,017	9,925
Norway	4,118	6,263
Portugal	1,253	3,778
Spain	1,296	1,748
Sweden	4,509	6,143
Switzerland	5,221	9,669
United Kingdom	2,438	7,862
United States	3,843	5,343
West Germany	2,470	5,185

NOTE: All currencies converted to U.S. dollars at current (1988) prices using purchasing power parity index (PPPI). See supplemental note to Indicators 13 and 15 on page 98 for details on calculation of the expenditures for Australia, Canada, Japan, the Netherlands, the United Kingdom, and the United States and information on private higher education spending in some countries. Some countries, including Japan and the United States, manifest large amounts of private spending on higher education. See the supplemental note to Indicators 13 and 15 on page 98 for an explanation of how current expenditure per student might change for higher education if the corresponding private component of educational expenditure were to be added in. See note in the appendix on page 113 for an explanation of international comparisons of current education expenditures. Consult the glossary for an explanation of the PPPI.

SOURCE: Organization for Economic Co-operation and Development, Center for Educational Research and Innovation, International Indicators Project, 1992. International Monetary Fund, Bureau of Statistics, *International Financial Statistics*, Volume XLI, November 12, 1988.

Table 13b: Current public expenditure per student, by level of education and state: 1988

State	Preprimary –secondary	Higher education
Alabama	$2,652	$ 6,137
Alaska	6,416	10,698
Arizona	3,389	4,881
Arkansas	2,773	6,417
California	3,664	5,995
Colorado	3,747	4,691
Connecticut	5,297	5,432
Delaware	3,819	4,641
District of Columbia	5,407	7,055
Florida	3,644	5,436
Georgia	3,208	6,437
Hawaii	2,983	7,363
Idaho	2,510	4,979
Illinois	3,386	4,260
Indiana	3,411	5,054
Iowa	3,496	5,299
Kansas	3,588	5,405
Kentucky	2,602	5,392
Louisiana	2,471	4,656
Maine	3,999	5,482
Maryland	4,125	6,347
Massachusetts	4,483	4,337
Michigan	4,004	4,740
Minnesota	3,894	5,289
Mississippi	2,346	5,954
Missouri	3,153	4,403
Montana	3,581	4,479
Nebraska	3,450	4,875
Nevada	3,419	5,382
New Hampshire	3,807	2,950
New Jersey	5,269	5,800
New Mexico	3,094	6,765
New York	5,174	5,557
North Carolina	3,303	6,928
North Dakota	3,339	5,881
Ohio	3,459	4,292
Oklahoma	2,895	4,096
Oregon	4,161	5,550
Pennsylvania	3,958	4,038
Rhode Island	4,449	3,671
South Carolina	3,085	5,845
South Dakota	3,049	4,421
Tennessee	2,888	5,859
Texas	3,323	5,599
Utah	2,365	5,423
Vermont	4,687	3,791
Virginia	3,784	4,764
Washington	3,669	5,841
West Virginia	3,285	4,706
Wisconsin	3,793	5,810
Wyoming	4,796	8,844

NOTE: See supplemental note to indicator 13 on page 98 for details on estimation of private school enrollments for 1988 for each state.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data Survey, 1988-89. Schools and Staffing Survey, 1987-88; Integrated Postsecondary Education Data System, 1988-89; PEDS Finance Survey, 1988-89; and Financial Statistics of Institutions of Higher Education Survey, 1988-89. U.S. Department of Commerce, Bureau of the Census, 1990 Census of the Population.

Indicator 14: Current public expenditure on education as a percentage of GDP/GSP

Gross domestic product (GDP) is an aggregate measure of the value of goods and services produced in a country. Gross state product (GSP) is the analogous measure for U.S. states. The percentage of GDP/GSP spent on education from public sources corresponds to the share of a country's or a state's income the *public* sector invests in education. Variations in this measure across countries and states reflect differences in income levels as well as national priorities or preferences. For this reason, this measure is at best an indicator of fiscal effort across states and countries of similar per capita wealth. It is not a measure of total investment in education, since in the United States and other countries there are additional private expenditures for education.

- **In the United States, public expenditures for education at all levels were 5 percent of GDP in 1988. While this was lower than the percent of GDP spent on education in Canada, it was higher than the percent of GDP spent on education in Japan or West Germany. The percent of GDP spent on education in France, Italy, and the United Kingdom was similar to that of the United States.**

- **Public expenditures for 1988 in the United States were 4 percent of GDP for the preprimary through secondary education level and 1 percent for higher education. Canada expended a larger fraction for higher education; Japan expended smaller fractions for both.**

- **Forty-eight states spent a higher percentage of their GSPs on education at all levels than did Germany or Japan. Three states and three OECD countries devoted 6 percent or more of their gross products to education funding. They were Montana, North Dakota, Wyoming, Denmark, Finland, and Norway.**

- **Public preprimary through secondary spending ranged from less than 3 percent of GSP in Hawaii and Nevada to 4.5 percent or more in West Virginia, Wyoming, Vermont, and Montana. The range across OECD countries was similar. Australia, West Germany, and Spain spent 3 percent or less of GDP on preprimary through secondary education, while Denmark, Finland, Luxembourg, and Sweden all spent 4.5 percent or more.**

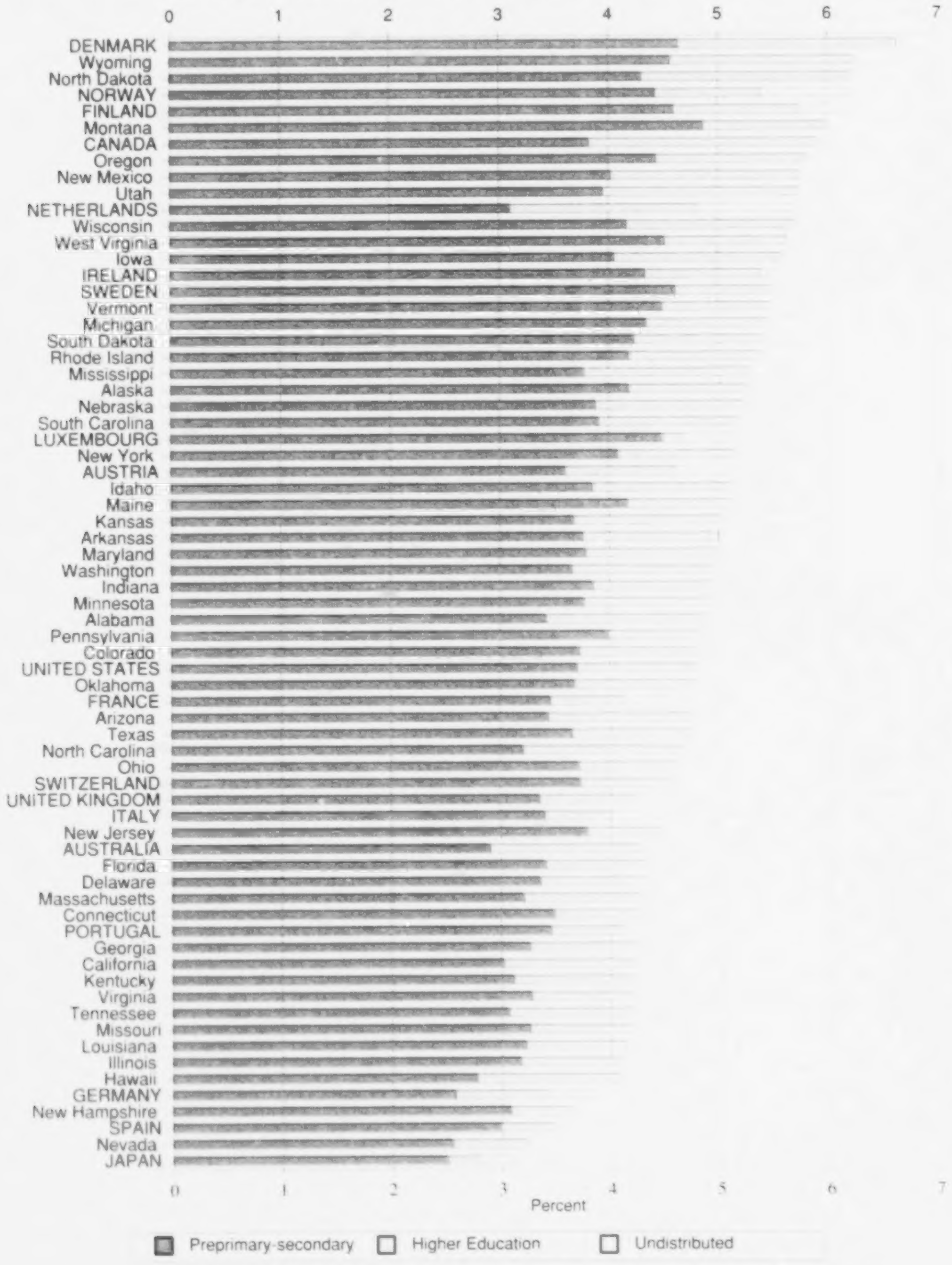
Notes on Interpretation:

This measure of public expenditures for education has the advantage that it does not require conversion of national currencies into dollars. However, it is not as useful for comparing countries that are vastly different in their stage of development or wealth per capita. Furthermore, fiscal effort measures such as this one convey little information about the absolute quantity of resources that a country devotes to each student's education. This measure can also be heavily influenced by the proportion of the population of school age and in school. Indicator 15 represents an attempt to control for this problem.

The percent "undistributed" represents that proportion of educational expenditure whose destination cannot be clearly identified as either preprimary through secondary or higher education. Administrative overhead at a national education ministry is sometimes classified as an undistributed expenditure, for example. Comparisons among countries on preprimary through secondary or on higher education expenditures can be made problematic by large undistributed proportions.

In some countries, particularly the United States and Japan, a large portion of expenditure on higher education comes from private sources, which are not included in this indicator. See the supplemental note to Indicator 14 on page 100 for data on private higher education expenditure in certain countries.

Figure 14: **Current public expenditure on education as a percentage of GDP/GSP, by country and state: 1988**



SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data Survey, 1988-89; Financial Statistics of Higher Education Survey, 1988-89; and Integrated Postsecondary Education Data System Finance Survey, 1988-89. *Statistical Abstract of the United States 1992*, Table 684. Organization for Economic Co-operation and Development, Center for Educational Research and Innovation, International Indicators Project, 1992.

Table 14a: Current public expenditure on education as a percentage of GDP, by level of education and country: 1988

OECD country	Preprimary–secondary	Higher education	Undistributed	Total
Australia	2.9	1.4	0.1	4.4
Austria	3.6	1.0	0.6	5.2
Canada	3.8	2.1	0.0	5.9
Denmark	4.6	2.0	0.0	6.6
Finland	4.6	1.1	0.5	6.2
France	3.5	0.7	0.6	4.8
Ireland	4.3	1.1	0.1	5.5
Italy	3.4	0.6	0.5	4.5
Japan	2.5	0.3	0.3	3.1
Luxembourg	4.5	0.2	0.5	5.2
Netherlands	3.1	1.7	0.9	5.7
Norway	4.4	1.0	0.8	6.2
Portugal	3.5	0.7	0.1	4.3
Spain	3.0	0.5	0.0	3.5
Sweden	4.6	0.9	0.0	5.5
Switzerland	3.7	0.9	0.0	4.6
United Kingdom	3.4	0.9	0.3	4.6
United States	3.7	1.1	0.0	4.8
West Germany	2.6	0.8	0.5	3.9

NOTE: See supplemental note to Indicator 14 on page 100 for details on calculation of the percentages for Japan, the Netherlands, Spain, and the United Kingdom. Some countries, including Japan and the United States, manifest large amounts of private spending on higher education. See the supplemental note to Indicator 14 on page 100 for an explanation of how current educational expenditure per GDP might change for higher education if the corresponding private component of educational expenditure were to be added in. See note in the appendix for an explanation of international comparisons of current public education expenditures.

SOURCE: Organization for Economic Co-operation and Development, Center for Educational Research and Innovation, International Indicators Project, 1992.

Table 14b: Current public expenditure on education as a percentage of GSP, by level of education and state: 1988

State	Preprimary –secondary	Higher education	Total
Alabama	3.4	1.5	4.9
Alaska	4.2	1.1	5.3
Arizona	3.4	1.3	4.7
Arkansas	3.8	1.2	5.0
California	3.0	1.2	4.2
Colorado	3.7	1.1	4.8
Connecticut	3.5	0.8	4.3
Delaware	3.4	1.0	4.3
District of Columbia	1.6	1.2	2.8
Florida	3.4	0.9	4.3
Georgia	3.3	1.0	4.2
Hawaii	2.8	1.3	4.1
Idaho	3.8	1.3	5.1
Illinois	3.2	0.9	4.1
Indiana	3.8	1.1	4.9
Iowa	4.0	1.5	5.6
Kansas	3.7	1.3	5.0
Kentucky	3.1	1.1	4.2
Louisiana	3.2	0.9	4.1
Maine	4.2	0.9	5.1
Maryland	3.8	1.2	5.0
Massachusetts	3.2	1.1	4.3
Michigan	4.3	1.1	5.4
Minnesota	3.8	1.2	4.9
Mississippi	3.8	1.5	5.3
Missouri	3.3	0.9	4.2
Montana	4.9	1.1	6.0
Nebraska	3.9	1.4	5.2
Nevada	2.5	0.7	3.2
New Hampshire	3.1	0.6	3.6
New Jersey	3.8	0.7	4.5
New Mexico	4.0	1.7	5.7
New York	4.1	1.1	5.1
North Carolina	3.2	1.5	4.7
North Dakota	4.3	1.9	6.2
Ohio	3.7	0.9	4.6
Oklahoma	3.7	1.1	4.8
Oregon	4.4	1.4	5.8
Pennsylvania	4.0	0.9	4.9
Rhode Island	4.2	1.2	5.4
South Carolina	3.9	1.3	5.2
South Dakota	4.2	1.2	5.4
Tennessee	3.1	1.1	4.2
Texas	3.7	1.1	4.7
Utah	3.9	1.8	5.7
Vermont	4.5	1.0	5.5
Virginia	3.3	1.0	4.2
Washington	3.7	1.3	4.9
West Virginia	4.5	1.1	5.6
Wisconsin	4.2	1.5	5.7
Wyoming	4.6	1.7	6.3

NOTE: See supplemental note to Indicator 14 on page 100 for details on calculation of the percentage for the District of Columbia.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data Survey, 1988-89; Financial Statistics of Institutions of Higher Education Survey, 1988-89; and Integrated Postsecondary Education Data System Finance Survey, 1988-89. *Statistical Abstract of the United States 1992*, Table 684.

Indicator 15: Current public expenditure per student relative to GDP/GSP per capita

This indicator adjusts public per-student expenditure by the wealth of a country or state, as measured by gross domestic product (GDP) or gross state product (GSP), respectively. It allows for instructive comparisons among countries or states with wide differences in gross products by examining what each country or state spends on its students relative to its available resources. For example, a country or state with a per-student expenditure lower than that of another may actually be devoting a larger share of its available resources to education if it is less wealthy. In such a case, the former country or state could be characterized as demonstrating a greater "fiscal effort" than the latter.

- **At the preprimary through secondary level, per-student spending in the United States in 1988 was almost 20 percent of its GDP per capita. Among the G-7 countries, Canada had a similar percentage. Italy had the third highest percentage, at 19, even though it had fewer resources than all of the other G-7 countries, bearing the lowest GDP per capita (see Indicator 3).**

- **The states with the highest preprimary through secondary expenditure relative to their GSPs per capita were Rhode Island, Oregon, and Vermont (24 percent or greater). This level of spending was most similar to that of Switzerland, Finland, Norway, and Denmark.**

- **Three states — Hawaii, Louisiana, and Nevada — had preprimary through secondary expenditures between 14 and 15 percent of their per-capita GSPs, the lowest level among the U.S. states. The OECD countries with the lowest levels — Spain, the Netherlands, and Japan — spent between 12 and 15 percent of their per-capita GDPs on preprimary through secondary education.**

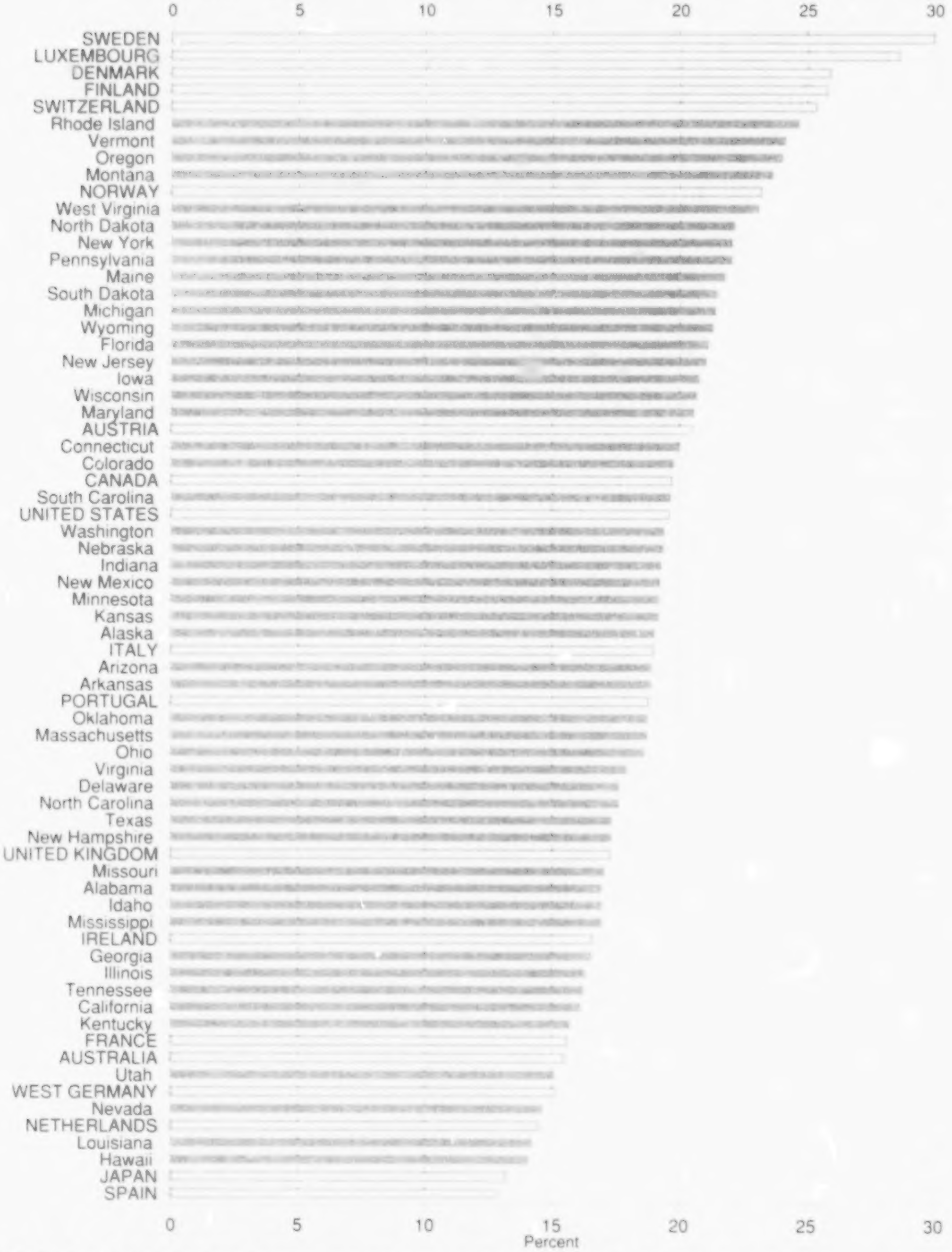
Notes on Interpretation:

Both Indicators 14 and 15 are measures of "fiscal effort" because they relate public expenditure to country or state wealth. Indicator 15 attempts to control for the proportion of the population that is of school age and enrolled in school. It is, thus, somewhat less volatile, and more consistent, than Indicator 14 in the face of varying proportions of school-aged populations to the general population. Countries or states with relatively high birth rates, for example, would likely rank relatively higher on Indicator 14 than on this indicator, other factors held equal.

This indicator does not, however, control for *access* to school. Some countries or states may have relatively high droput rates due to an insufficient supply of school places given the demand, cultural norms that keep would-be students (especially females) at home, or the demands of poverty that force young people to begin work at an early age. Considering this aspect of access to education, Indicator 14, which does not control for the number of enrolled students (and, thus, does not exclude dropouts from its calculation), is the less volatile, and more consistent, measure of fiscal effort.

In some countries, particularly the United States and Japan, a large portion of expenditure on higher education comes from private sources, which are not included in this indicator. See the supplemental note to Indicator 13 on page 98 for data on private higher education expenditure in certain countries.

Figure 15: **Current public expenditure for preprimary through secondary education per student relative to GDP per capita, by country and state: 1988**



SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data Survey, 1988-89 and Schools and Staffing Survey, 1987-88. U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Series P-25, No. 1058, State Population and Household Estimates: July 1, 1989; and 1990 Census of the Population. *Statistical Abstract of the United States, 1992*. Table 634. Organization for Economic Co-operation and Development, Center for Educational Research and Innovation, International Indicators Project, 1992.

Table 15a: Current public expenditure per student relative to GDP per capita, by level of education and country: 1988

OECD country	Preprimary –secondary	Higher education
Australia	15.5	40.7
Austria	20.5	36.3
Canada	19.7	40.0
Denmark	25.9	76.3
Finland	25.8	38.3
France	15.6	26.4
Ireland	16.6	54.4
Italy	19.0	28.3
Japan	13.2	13.6
Luxembourg	28.6	62.8
Netherlands	14.5	71.2
Norway	23.2	42.4
Portugal	18.8	56.7
Spain	12.8	17.3
Sweden	30.0	40.9
Switzerland	25.4	51.8
United Kingdom	17.3	55.6
United States	19.6	27.3
West Germany	15.1	31.7

NOTE: See supplemental note to Indicator 13 and 15 on page 98 for details on calculation of the ratios for Australia, Canada, Japan, the Netherlands, the United Kingdom, and the United States. Some countries, including Japan and the United States, manifest large amounts of private spending on higher education. See the supplemental note to Indicators 13 and 15 on page 98 for an explanation of how current expenditure per student might change for higher education if the corresponding private component of educational expenditure were to be added in. See note in the appendix for an explanation of international comparisons of current education expenditures.

SOURCE: Organization for Economic Co-operation and Development, Center for Educational Research and Innovation, International Indicators Project, 1992. International Monetary Fund, Bureau of Statistics, *International Financial Statistics*, Volume XLI, Number 12, December, 1988.

Table 15b: Current public expenditure per student relative to GSP per capita, by level of education and state: 1988

State	Preprimary –secondary	Higher education
Alabama	17.0	39.3
Alaska	19.0	31.9
Arizona	18.9	27.3
Arkansas	18.9	43.8
California	16.2	26.4
Colorado	19.8	24.8
Connecticut	20.0	20.5
Delaware	17.7	21.5
District of Columbia	9.0	11.8
Florida	21.1	31.5
Georgia	16.6	33.3
Hawaii	14.1	34.8
Idaho	17.0	38.7
Illinois	16.3	20.5
Indiana	19.3	28.6
Iowa	20.8	31.5
Kansas	19.2	28.9
Kentucky	15.7	32.6
Louisiana	14.2	26.8
Maine	21.8	29.9
Maryland	20.6	31.7
Massachusetts	18.8	18.1
Michigan	21.4	25.4
Minnesota	19.2	26.1
Mississippi	17.0	43.0
Missouri	17.1	23.8
Montana	23.7	29.6
Nebraska	19.4	27.4
Nevada	14.6	23.0
New Hampshire	17.4	13.5
New Jersey	21.1	23.2
New Mexico	19.3	42.1
New York	22.1	23.7
North Carolina	17.6	37.0
North Dakota	22.2	39.1
Ohio	18.7	23.1
Oklahoma	18.8	26.5
Oregon	24.0	32.1
Pennsylvania	22.1	22.5
Rhode Island	24.7	20.4
South Carolina	19.7	37.3
South Dakota	21.5	31.2
Tennessee	16.3	33.0
Texas	17.4	29.3
Utah	15.1	34.7
Vermont	24.2	19.6
Virginia	18.0	22.6
Washington	19.4	30.9
West Virginia	23.1	33.1
Wisconsin	20.7	31.7
Wyoming	21.3	39.3

NOTE: See supplemental note to Indicator 13 and 15 on page 98 for details on calculation of the ratio for the District of Columbia and on estimation of private school enrollments for 1988 for each state.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data Survey, 1988-89; Financial Statistics of Institutions of Higher Education Survey, 1988-89; Integrated Postsecondary Education Data System 1988-89; IPEDS Finance Survey, 1988-89; and estimates based on Schools and Staffing Survey, 1987-88. *Statistical Abstract of the United States 1992*, Table 634. U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Series P-25, No. 1058, State Population and Household Estimates: July 1, 1989; and 1990 Census of the Population.

Indicator 16: Distribution of current public expenditure on education

The distribution of current public expenditure between the preprimary through secondary level and the higher education level reflects national educational goals and strategies regarding the priority given to each educational level. It is also influenced by the number of students enrolled in each level. The indicator does not give a complete picture of the distribution of public resources between the two levels, since some countries did not classify the distribution of portions of their expenditure, reporting them, instead, as "undistributed."

- **Among the G-7 countries in 1988, Japan spent a higher percentage of its total public educational expenditure at the preprimary through secondary level than did the United States. Among all the countries, Canada devoted the largest share of its current educational expenditure to the higher education level. It spent approximately 35 percent of its expenditure at that level, while the United States spent 23 percent. Undistributed ranged from 0 in Canada, Denmark, Japan, Sweden, and the United States, to over 15 percent in the Netherlands.**

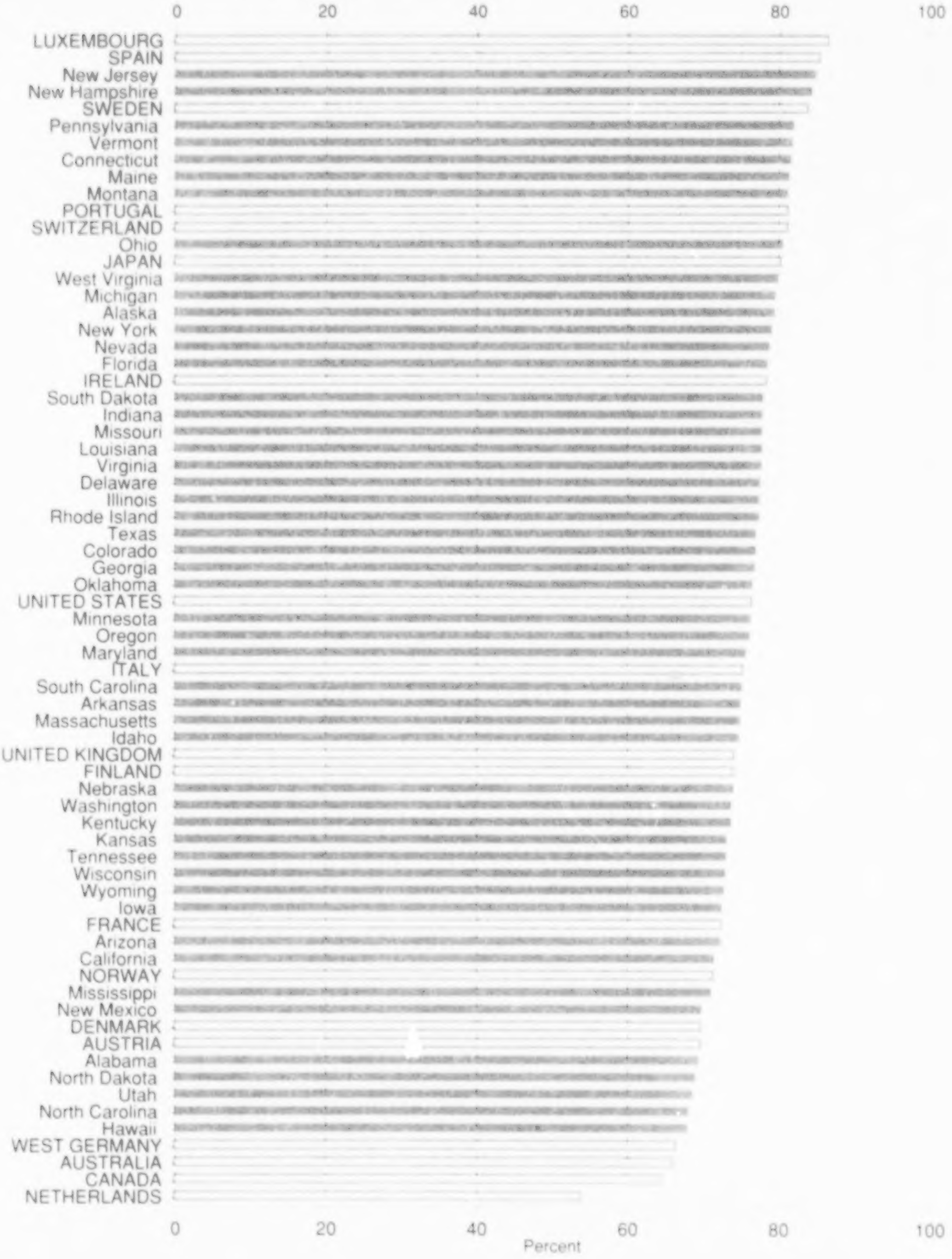
- **States spending above 80 percent of their public educational expenditure at the preprimary through secondary level included Connecticut, Maine, Montana, New Hampshire, New Jersey, Ohio, Pennsylvania, Vermont, and West Virginia. The OECD countries spending a similar percentage were Japan, Portugal, Luxembourg, Spain, Switzerland, and Sweden. The states with the largest shares of expenditure at the postsecondary level (30 percent or above) were Alabama, Hawaii, New Mexico, North Carolina, North Dakota, and Utah. Australia, Canada, Denmark, and the Netherlands allocated a similar share to postsecondary education.**

Notes on Interpretation

The duration, the number of years of school comprised by a school level, can vary from country to country and from state to state. Preprimary education, for example, is not available in all states and countries. Some countries, moreover, have an extra year of secondary school for some of their students. The longer the duration of a school level, the larger a share of educational expenditure one would expect at that level.

This indicator should not be interpreted as a measure of the resources devoted to education, but rather as an indicator of the distribution of those resources between education levels. Strictly speaking, this indicator is not a measure of "fiscal effort" because the amount of resources available, which represent the wealth of the country or state and which can vary across countries and states, is not controlled in the calculation.

Figure 16: Percent of current public expenditure for preprimary through secondary education, by country and state: 1988



SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data Survey, 1988-89. Organization for Economic Co-operation and Development, Center for Educational Research and Innovation, International Indicators Project, 1988-89.

Table 16a: Distribution of current public expenditure on education across school levels, by country: 1988

	Percent of public education expenditure		
OECD country	Preprimary –secondary	Higher education	Undistributed/ other
Australia	66.2	30.9	2.9
Austria	69.9	19.5	10.6
Canada	64.7	35.3	0.0
Denmark	69.9	30.0	0.0
Finland	74.2	18.4	7.4
France	72.6	13.9	13.4
Ireland	78.5	19.0	2.4
Italy	75.5	13.5	11.0
Japan	80.4	9.0	10.7
Luxembourg	86.7	3.3	10.0
Netherlands	54.0	30.2	15.8
Norway	71.5	15.4	13.1
Portugal	81.3	15.5	3.2
Spain	85.5	13.4	1.1
Sweden	84.0	16.0	0.0
Switzerland	81.3	18.7	0.0
United Kingdom	74.3	19.0	6.8
United States	76.6	23.4	0.0
West Germany	66.5	21.5	12.0

NOTE: See supplemental note to Indicator 16 on page 101 for details on calculation of the shares of Luxembourg, Australia, Japan, the Netherlands, and Sweden. See note in the appendix on page 113 for an explanation of international comparisons of current public education expenditures.

SOURCE: Organization for Economic Co-operation and Development, Center for Educational Research and Innovation, International Indicators Project, 1992.

Table 16b: Distribution of current public expenditure on education across school levels, by state: 1988

State	Percent of public education expenditure: Preprimary–secondary	Percent of public education expenditure: Higher education
Alabama	69.6	30.4
Alaska	79.6	20.4
Arizona	72.6	27.5
Arkansas	75.2	24.8
California	71.7	28.3
Colorado	77.2	22.8
Connecticut	81.8	18.2
Delaware	77.7	22.3
District of Columbia	56.9	43.1
Florida	78.7	21.3
Georgia	77.1	22.9
Hawaii	68.1	31.9
Idaho	75.0	25.0
Illinois	77.7	22.3
Indiana	78.1	21.9
Iowa	72.7	27.3
Kansas	73.3	26.7
Kentucky	73.9	26.1
Louisiana	78.9	22.0
Maine	81.5	18.5
Maryland	75.9	24.1
Massachusetts	75.1	24.9
Michigan	79.7	20.3
Minnesota	76.5	23.5
Mississippi	71.3	28.7
Missouri	78.0	22.0
Montana	81.4	18.7
Nebraska	74.2	25.8
Nevada	79.0	21.0
New Hampshire	84.5	15.5
New Jersey	85.1	14.9
New Mexico	70.0	30.1
New York	79.3	20.7
North Carolina	68.3	31.7
North Dakota	69.2	30.8
Ohio	80.7	19.3
Oklahoma	76.7	23.3
Oregon	76.4	23.6
Pennsylvania	82.1	17.9
Rhode Island	77.7	22.4
South Carolina	75.3	24.7
South Dakota	78.1	21.9
Tennessee	73.3	26.7
Texas	77.2	22.8
Utah	68.8	31.2
Vermont	82.0	18.1
Virginia	77.9	22.1
Washington	74.0	26.1
West Virginia	80.1	19.9
Wisconsin	73.1	26.9
Wyoming	73.0	27.0

SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data survey, 1988–89; Financial Statistics of Higher Education Survey, 1988–89; and Integrated Postsecondary Education Data System Finance Survey, 1988–89.

SUPPLEMENTAL NOTES

SUPPLEMENTAL NOTES

Indicator 1: Note on population and area

Notes on Figure and Tables

United States

Due to the unique nature of the District of Columbia, its data were found to be highly volatile and, at times, different in character from that for the states. District of Columbia data, then, are included in the tables, but not in the figures, so as not to employ them comparatively.

Indicator 3: Note on GDP/GSP per capita

Notes on Figure and Tables

United States

Due to the presence in the District of Columbia workforce of many who reside in the suburbs outside the District, the gross product of the District is abnormally large relative to its residential population.

Indicator 5: Note on participation in formal education

Notes on Figure and Tables

Australia

Preprimary are excluded.

Belgium

High proportion of student population classified in accordance with non-grade-level students.

Italy, Portugal, Sweden

No distinction between full-time and part-time.

Luxembourg

Many students at upper secondary and higher education are enrolled in the surrounding countries.

United States

Private-school enrollment data for the preprimary through secondary level in 1988 were not available by state. Individual state estimates were imputed using the country-level enrollment data from 1988, and state-level enrollment data from 1990.

Private-school enrollment figures for preprimary through secondary enrollment in 1988, for each state, were estimated in the following fashion: First, the percentage of all private school students in each state was calculated by dividing the number of private-school students in the state (in the first through twelfth grades, in 1990) by the total number of private-school students in the United States (in the first through twelfth grades, in 1990). Second, U.S. private-school enrollment from the preprimary through twelfth grades (in 1988) was multiplied by each state's private-school enrollment percentage. This produced estimates for the number of private school students from the preprimary through twelfth grades for each state.

Indicator 6: Note on upper secondary enrollment

Notes on Figure and Tables

Luxembourg

Some students are enrolled in the surrounding countries.

Spain

The theoretical durations for general education and for vocational education are not the same. In some cases, the difference can be high.

United States

Private school enrollment data for the upper secondary grades (10th–12th grades), in 1988, were not available at the state level. Individual state estimates were imputed using the country-level enrollment data from 1988, and state-level enrollment data from 1990.

Private-school enrollment figures for the upper secondary grades in 1988, for each state, were estimated in the following fashion: First, the percentage of all private-school students in each state was calculated by dividing the number of private-school students in the state (in the tenth through twelfth grades, in 1990) by the total number of private-school students in the United States (in the tenth through twelfth grades, in 1990). Second, U.S. private-school enrollment from the upper secondary grades (in 1988) was multiplied by each state's private-school enrollment percentage. This produced estimates for the number of private-school students from the tenth through twelfth grades for each state used in the table.

Indicator 7: Note on non-university higher education enrollment

Notes on Figure and Tables

France

Distance education and auditors are not taken into account.

Italy, Sweden

No distinction is made between full-time and part-time student status.

Luxembourg

Most higher education students are enrolled in surrounding countries.

United Kingdom

Private higher education, though relatively small, is excluded.

Indicator 8: Note on university enrollment

Notes on Figure and Tables

Belgium

The distinction between non-university higher education and university education is difficult to establish. In Belgium, higher education is divided into short-term higher education, long-term higher education, and university education. The short-term type corresponds more or less to non-university postsecondary education. Data have not been provided for it, however.

Long-term higher education is organized in two cycles of two years each and is of a university type. University education includes university education and long-term higher education.

In the case of Belgium as a whole, the data in this table refer only to university education in a strict sense. With respect to Belgium (Flemish Community), the data refer only to long-term higher education. Comparable estimates for Belgium (French Community) are missing.

The figures on university entrance in Belgium as a whole may therefore be underestimates of the true figures.

France

The "Grandes Écoles" have been counted as higher education (university).

Italy, Portugal, Sweden

No distinction between full-time and part-time.

Netherlands

Students at the postgraduate level are not included.

United Kingdom

Private higher education, though relatively small, is excluded.

United States

Due to the presence of several large, private universities in the District of Columbia that draw students primarily from outside the District, the participation ratio for the District may be misleading. Many of the enrolled students either live outside the district and are not counted in the age-range population, or moved to the District solely for the purpose of attending school.

Indicator 9: Note on mathematics achievement

Technical Note

The data for *Indicator 9* were the result of a study conducted for the purpose of linking the 1991 International Assessment of Educational Progress (IAEP) and the 1992 National Assessment of Educational Progress (NAEP). Both assessment instruments were administered to a sample of 1,609 U.S. students. A linear regression was fitted to the data, that is, the parameters of a formula to predict a students's NAEP score on the basis of his IAEP score were estimated. This formula was then applied to the students in the IAEP samples. Additional steps were taken to insure that the overall variability in the scores was not affected. With the predicted NAEP scores it was possible to calculate various statistics, including the percentile scores presented in Indicator 9. Alternative methods of linking the two assessments are available including "linear equating" and "percentile equating." For example, Beaton and Gonzalez (1993) used "linear equating" to predict NAEP scores from IAEP scores. Each method will produce different results. Further study is necessary to determine which method is best. For that reason, this *Indicator 9* is labeled as experimental.

In addition to estimating average mathematics proficiency and percentile scores on the NAEP scale for the IAEP countries, a study was conducted to assess all the related components of error that are possibly associated with such estimates. Four sources of error were investigated. These result from not having or not knowing the following: 1) the true relationship between the IAEP and NAEP assessments, 2) results for the entire IAEP populations, 3) simple randomly selected samples, and 4) the true proficiency level of every student. These components were quantified so that standard errors corresponding to the estimates could be derived (Tables 9ax and 9bx on pages 109 and 110).

Caution should be exercised in comparing 8th grade students from various states to 13-year-old students in other countries because of differing age distributions. Eighth-grade students participating in the 1992 NAEP Trial State Assessment were most likely older than the average 13-year-old assessed in March of 1991 in the IAEP countries. For example, in March 1988 45 percent of U.S. 8th graders were 13 years old, 46 percent were 14 years old, 8 percent were 15 years old, and less than 1 percent were 12 years old. The age distribution of 8th grade students also varies across states, as state governments set different minimum ages for starting school.

For more information on the methodology of the cross-linking study, see Peter J. Pashley and Gary W. Phillips, *Toward World-Class Standards: A Research Study Linking International and National Assessments*, (Princeton, NJ: Educational Testing Service, June 1993). Also see A.E. Beaton and E.J. Gonzalez, "Comparing the NAEP Trial State Assessment Results with the IAEP International Results," *Setting Performance Standards for Student Achievement: Background Studies* (Stanford, CA: National Academy of Education, 1993).

Description of Levels of Mathematics Proficiency

Level 350: Multi-Step Problem Solving and Algebra

Students at this level can apply a range of reasoning skills to solve multi-step problems. They can solve routine problems involving fractions and percents, recognize properties of basic geometric figures, and work with exponents and square roots. They can solve a variety of two-step problems using variables, identify equivalent algebraic expressions, and solve linear equations and inequalities. They are developing an understanding of functions and coordinate systems.

Level 300: Moderately Complex Procedures and Reasoning

Students at this level are developing an understanding of number systems. They can compute with decimals, simple fractions, and commonly encountered percents. They can identify geometric figures, measure lengths and angles, and calculate areas of rectangles. These students are also able to interpret simple inequalities, evaluate formulas, and solve simple linear equations. They can find averages, make decisions on information drawn from graphs, and use logical reasoning to solve problems. They are developing the skills to operate with signed numbers, exponents, and square roots.

Level 250: Numerical Operations and Beginning Problem Solving

Students at this level have an initial understanding of the four basic operations. They are able to apply whole number addition and subtraction skills to one-step word problems and money situations. In multiplication, they can find the product of a two-digit and a one-digit number. They can also compare information from graphs and charts, and are developing an ability to analyze simple logical relations.

Level 200: Beginning Skills and Understandings

Students at this level have considerable understanding of two-digit numbers. They can add two-digit numbers, but are still developing an ability to regroup in subtraction. They know some basic multiplication and division facts, recognize relations among coins, can read information from charts and graphs, and use simple measurement instruments. They are developing some reasoning skills.

Level 150: Simple Arithmetic Facts

Students at this level know some basic addition and subtraction facts, and most can add two-digit numbers without regrouping. They recognize simple situations in which addition and subtraction apply. They also are developing rudimentary classification skills.

Indicator 10: Note on higher education completion

Notes on Figure and Tables

Denmark, Finland, Norway, and Sweden

The distinction between university education and graduate-level education is not clear.

The indicator primarily shows the degrees obtained at the university level in college outside the universities (e.g., colleges for teacher training, physiotherapy, bachelor of science, and engineering).

France

Totals for the *License* include totals for the first degree of the medical faculties (*Doctorat*) and the last degree of the "Grand Écoles" (*diplôme de fin d'études*). One third of the university degrees are obtained in the "Grand Écoles."

Norway

In the Norwegian university system there is only one degree at the university level — Cand. Mag. degree. The number of students taking this degree is less than 10 percent of the total number of graduates from colleges and universities.

Spain

Spain has two types of higher education degrees: the "diplomados," which require three years of study, and the "licenciates," which require five years of study. Both are terminal.

United States

Due to the presence of several large private universities in the District of Columbia that draw students primarily from outside the District, the completion ratio for the District may be abnormally high, distorted by the presence of the many in-migrant students.

Indicator 11: Note on unemployment and education

Notes on Figure and Tables

Austria, Italy, Spain

The distinction between higher education (non-university) and higher education (university) is not relevant.

Netherlands

Only persons who are actively looking for a job and who are in a position to begin employment within three week's time are considered to be unemployed.

United States

Women aged 60–64 are excluded from the relevant population.

Data on proportions of the population with various levels of educational attainment in individual states are from the Current Population Survey (CPS). The CPS collects information only on the highest grade an individual attended school and whether or not that grade was completed. In order to compare across countries, years of education were grouped into the following levels of education:

8th grade or less = preprimary–primary
9th-11th grade = lower secondary
12th grade-1 year of college = upper secondary
1-3 years of college = higher education (non-university)
4 or more years of college = higher education (university)

West Germany

People in apprenticeships are considered not to be part of the active working population.

Indicator 12: Note on educational attainment of the population

Notes on Figure and Tables

Italy, Spain

Non-university higher education is almost non-existent in these countries. Adults having obtained a degree of this type are counted with higher education graduates.

United Kingdom

The female retirement age is 60 years. Hence, the data are based on the age group 25–59 years for women and 25–64 years for men.

United States

Data on proportions of the population with various levels of educational attainment in individual states are from the Current Population Survey (CPS). The CPS collects information only on the highest grade an individual attended school and whether or not that grade was completed. In order to compare across countries, years of education were grouped into the following levels of education:

8th grade or less = preprimary–primary
9th-11th grade = lower secondary
12th grade-1 year of college = upper secondary
1-3 years of college = higher education (non-university)
4 or more years of college = higher education (university)

Indicators 13 and 15: Note on current public expenditure per student

Notes on Figure and Tables

Australia

Expenditure at the secondary level includes only the cost of comprehensive education and not that of vocational education.

Canada

All data are estimates.

United Kingdom

The estimated expenditure for nursing and paramedical students are not included, but the number of these students has been counted. The cost per student at the higher education level is therefore underestimated.

United States

Due to the presence in the District of Columbia of many workers who reside in the suburbs outside the District, the gross product of the District is abnormally large relative to its population. It is the size of its residential population, however, and not its workforce, that more directly determines its educational expenditure.

Private school enrollment data for the preprimary through secondary level in 1988 were not available by state. Individual state estimates were imputed using the country-level enrollment data from 1988, and state-level enrollment data from 1990.

Private school enrollment figures for preprimary through secondary enrollment in 1988 for each state were estimated in the following fashion: First, the percentage of all private-school students in each state was calculated by dividing the number of private school students in the state (in the first through twelfth grades, in 1990) by the total number of private school students in the United States (in the first through twelfth grades, in 1990). Second, U.S. private-school enrollment from the preprimary through twelfth grades (in 1988) was multiplied by each state's private school enrollment percentage. This produced estimates for the number of private-school students from the preprimary through twelfth grades for each state.

Technical Notes

Private Expenditures

Per pupil expenditure is calculated as current public expenditure divided by enrollment in both public and private schools. Because it does not include investment from private sources, it is not a measure of total resources students receive. Data on private expenditures were not available for all countries, but the available data on higher education per student expenditures for public and private sources are listed below. In both Japan and the United States, private sources account for a large portion of total higher education expenditures.

Current higher education expenditure per student

	Public Sources Only	Private Sources Only	Public and Private Sources
Denmark	$ 11,683	$ 0	$ 11,683
France	4,129	658	4,787
Japan	2,042	2,937	4,979
Netherlands	9,925	416	10,341
United States	5,343	3,152	8,495

Education Expenditure:

The international expenditure data in these tables were based on differing fiscal years. The United States used data from October, 1988 to September, 1989, while other countries' fiscal years ended as late as July, 1989. Those countries whose fiscal years ended later than others would have relatively inflated expenditure data. Thus, steps were taken to adjust all countries' expenditure to the July, 1988 through June, 1989 fiscal year.

First, to allow for inflation between the starting month of the fiscal year and July, 1988, for a country, the CPI (Consumer Price Index) for July, 1988, was divided by the CPI for the initial month of the country's financial year. These factors were multiplied by a country's educational expenditure in order to adjust for the inflation between the starting month of a country's fiscal year and July, 1988.

Second, a purchasing power parity index (PPPI) was used to convert each country's expenditure from its own monetary units to American dollars. The PPPIs were adjusted for the start of the fiscal year at July, 1988, by finding the midpoint between the 1988 PPPI and the 1989 PPPI.

SOURCE: Bureau of Statistics of the International Monetary Fund, "International Financial Statistics," Volume XLI, Number 12, December, 1988.

Indicator 14: Note on current public expenditure on education as a percentage of GDP/GSP

Notes on Figure and Tables

Japan, Netherlands

Current public expenditure data was not directly available from the Netherlands or Japan; it had to be imputed. The current expenditure data from the Netherlands and Japan did not separate public from private expenditure; only in total expenditure were public and private data listed separately.

Current public expenditure for these countries was estimated, first, by dividing public total expenditure by the overall total expenditure. This percentage was then multiplied by the Netherlands or Japan's total current expenditure.

Luxembourg

Most higher education students are enrolled in the surrounding countries.

Spain

Public expenditure for education is underestimated because a large part of the pension costs are not included.

Sweden

Preprimary data are estimated. They include only expenditure for programs for 6-year-olds, which the municipalities are required to establish. They do not include programs for younger children.

United Kingdom

The data include expenditure of the Department of Education and Science (DES) as well as the expenditure of local education authorities (LEAs). They exclude expenditure by the Department of Health on nursing and paramedical education.

United States

Due to the presence in the District of Columbia of many workers who reside in the suburbs outside the District, the gross product of the District is abnormally large relative to its population. It is the size of its residential population, however, and not its workforce, that more directly determines its educational expenditure.

West Germany

In accordance with the German National Accounting System, educational expenditure includes, as bookkeeping entries, contributions to the pension funds for teachers who are civil servants.

Total public expenditure refers to expenditure by the Federal and Lander governments as well as by local government; it does not include the expenditure by the social insurance funds.

Technical Note

Current public and private expenditure on higher education as a percentage of GDP, by country: 1988

Japan	0.68
Netherlands	1.80
United States	1.80
France	0.77
Denmark	1.99

Indicator 16: Note on distribution of current public expenditure on education

Notes on Figure and Tables

Australia

Expenditure for higher education includes expenditure for vocational secondary education, as it is taught in higher education institutions.

Japan, Netherlands

Current public expenditure data was not directly available from the Netherlands or Japan; it had to be imputed. The current expenditure data from the Netherlands and Japan did not separate public from private expenditure; only in total expenditure were public and private data listed separately.

Current public expenditure for these countries was estimated, first, by dividing public total expenditure by the overall total expenditure. This percentage was then multiplied by The Netherlands' or Japan's total current expenditure.

Luxembourg

Most higher education students are enrolled in the surrounding countries.

Sweden

Preprimary data are estimated. They include only expenditure for programs for 6-year-olds, which the municipalities are required to establish. They do not include programs for younger children.

APPENDIX

Note on the inclusion of the District of Columbia

Due to the unique nature of the District of Columbia, its data were found to be highly volatile and, at times, different in character from that for the states. This was particularly true for gross product and higher education figures. District of Columbia data, then, are included in the tables, but not in the figures, so as not to employ them comparatively.

Table 4bx: Standard errors for Indicator 4

OECD country	Participation rate		
	Total	Male	Female
Alabama	1.24	1.48	1.62
Alaska	1.16	1.46	1.46
Arizona	1.14	1.35	1.50
Arkansas	1.17	1.47	1.47
California	0.53	0.65	0.68
Colorado	1.07	1.44	1.27
Connecticut	1.11	1.35	1.45
Delaware	1.07	1.26	1.43
District of Columbia	1.12	1.38	1.44
Florida	0.52	0.65	0.66
Georgia	0.98	1.32	1.17
Hawaii	1.12	1.36	1.45
Idaho	1.16	1.48	1.45
Illinois	0.56	0.67	0.73
Indiana	1.17	1.42	1.51
Iowa	0.95	1.14	1.25
Kansas	0.98	1.26	1.21
Kentucky	1.19	1.48	1.52
Louisiana	1.21	1.49	1.55
Maine	1.14	1.49	1.39
Maryland	1.07	1.35	1.34
Massachusetts	0.51	0.66	0.63
Michigan	0.60	0.75	0.76
Minnesota	0.93	1.21	1.15
Mississippi	1.18	1.50	1.48
Missouri	1.11	1.34	1.45
Montana	1.12	1.32	1.47
Nebraska	1.30	1.48	1.75
Nevada	1.14	1.34	1.52
New Hampshire	1.00	1.33	1.21
New Jersey	0.52	0.66	0.65
New Mexico	1.02	1.24	1.32
New York	0.56	0.70	0.71
North Carolina	0.55	0.68	0.71
North Dakota	0.96	1.09	1.30
Ohio	0.54	0.64	0.72
Oklahoma	1.10	1.33	1.43
Oregon	1.20	1.43	1.58
Pennsylvania	0.54	0.63	0.72
Rhode Island	1.12	1.20	1.55
South Carolina	0.96	1.24	1.19
South Dakota	0.86	1.03	1.12
Tennessee	1.09	1.15	1.51
Texas	0.54	0.68	0.68
Utah	1.13	1.46	1.39
Vermont	1.13	1.36	1.47
Virginia	0.88	1.10	1.13
Washington	1.11	1.43	1.39
West Virginia	1.28	1.41	1.74
Wisconsin	0.90	1.14	1.14
Wyoming	1.24	1.52	1.60

Note on *enrollment reference groups* and *graduation reference ages*: Indicators 5, 6, 7, 8, and 10

Enrollments

Enrollment ratios allow comparisons across states and countries by standardizing enrollment in a particular education level to the size of the population in an age group typical for enrollment in that level. Indicators 6, 7, and 8 present enrollment ratios for the upper secondary, non-university higher education, and university levels. Indicator 5 presents an overall enrollment ratio for all levels of education. None of these ratios should be interpreted as an enrollment *rate*, i.e. as the percent of students in a particular age range who are enrolled at that level of education. This is immediately apparent in those cases where ratios exceed 100, as some do at the upper secondary education level. Each enrollment ratio compares the number of students enrolled in a particular level of education to the number of people in an age *range* that represents the usual ages of students at that level of education. More importantly, the *width* of the age range best approximates the average duration of study at that level of education.

For indicators 6, 7, and 8, the ratio is calculated by dividing the number of students of *any* age enrolled in a particular level of education by the population in the *enrollment reference group* (the population in the age range typical for enrollment at that level) and multiplying by 100:

$$\text{enrollment ratio} = \frac{\text{students of any age enrolled in education level}}{\text{population in enrollment reference group}} \times 100$$

This ratio thus represents the number of enrolled students per 100 students in the enrollment reference group. Under some conditions the enrollment ratio would be a fairly good estimate of the enrollment rate. For example, if in a particular country all students begin primary (elementary) education at nearly the same age, say 6, and if grade retention, repetition, and skipping is rare, then the ratio of students enrolled in grades 1 through 6 divided by the number of children between the ages of 6 and 11 would be a good estimate of the enrollment rate in elementary education. However, these conditions rarely hold for enrollment in higher education, and often do not hold for enrollment in upper secondary (high school) education. To identify enrollment reference groups for each country, countries specified an age typical for beginning education at each level and the number of years typically required for completing education at each level. If this number of years is less than the actual average number of years required for completing education at that level, then, in a sense, the population reference group is too small, and the ratios too large. This is more likely to be a factor in education systems where retention and repetition is common, where a substantial number of students attend part-time, or where a substantial number of students enter the system again even after already earning a credential at that level.

Fortunately, because the sizes of different age cohorts within the same general age range are approximately equal, an enrollment ratio is relatively insensitive to the selection of the age typical for beginning students, but relatively sensitive to the selection of the age range or typical duration of education at that level. For example, dividing the number of students enrolled in upper secondary school in Norway by the population in the 16- to 18-year-old age range would yield almost the same result as dividing it by the population in the 17- to 19-year-old age range, an age range of 3 years in both cases. The reason is that the population of 16-year-olds and 19-year-olds are likely to be similar and so the result insensitive to whether one includes one age cohort or the other in the population reference group. However, dividing by the population of 16- to 19-year-olds, an age range of 4 instead of 3, would yield a substantially (approximately 25 percent) smaller ratio. So it is important that the age range in the population reference group be a close approximation of the actual average duration required to complete a particular level of education.

University completion

Similarly, the numbers of university degree recipients were standardized for comparison purposes as ratios of degree recipients per 100 people at the *graduation reference age*. Even though many students receive degrees at ages other than the graduation reference age, the ratio nevertheless allows useful comparisons across countries because it places the number of graduates in relation to the size of a typical cohort of students. Assuming that the sizes of different age cohorts within the same general age range are approximately equal, the ratio will not be significantly affected if large numbers of students receive degrees at ages other than the graduation reference age. This indicator should be interpreted carefully, however, because it includes those receiving a second university degree even though the graduation reference ages are based on first degree (undergraduate) completion.

Enrollment reference groups—typical starting ages and years of completion for upper secondary and higher education—and university graduation reference ages

	Upper Secondary		Non-university Higher Education		University (Undergraduate and graduate)		
Country	Typical starting age	Typical duration	Typical starting age	Typical duration	Typical starting age	Typical duration	Graduation reference age
Australia	16	2	18	3	18	7	22
Austria	14	5	19	3	19	6	23
Belgium	—	—	18	3	18	7	22
Canada	15	3	18	3	18	7	22
Denmark	16	3	19	3	19	7	22
Finland	16	3	19	3	19	7	23
France	15	3	18	2	18	7	21
Ireland	16	2	18	3	18	6	21
Italy	14	5	19	3	19	7	23
Japan	15	3	18	3	18	9	22
Luxembourg	15	4	19	3	19	7	—
Netherlands	16	3	19	4	19	8	23
New Zealand	15	3	18	3	18	7	21
Norway	16	3	19	3	19	7	22
Portugal	15	3	—	—	18	7	—
Spain	14	4	18	3	18	7	21/23
Sweden	16	3	19	3	19	7	23
Switzerland	16	4	20	3	20	7	25
Turkey	15	3	18	3	18	7	23
United Kingdom	14	4	18	3	18	7	21
United States	15	3	18	2	18	7	22
West Germany	16	3	19	3	19	7	22

— Data not available for this category.

Table 9ax: Standard errors for averages and percentile scores in Table 9a

	Average proficiency	Percentile score						
		5th	10th	25th	50th	75th	90th	95th
Canada	0.7	1.2	1.0	0.8	0.7	0.8	1.0	1.1
France	0.9	1.5	1.2	1.0	0.9	1.0	1.1	1.3
Hungary	1.0	1.8	1.5	1.1	1.0	1.0	1.3	1.5
Ireland	1.0	1.7	1.4	1.1	1.0	1.0	1.2	1.4
Israel	0.9	1.5	1.3	1.0	0.9	0.9	1.1	1.3
Italy	1.0	1.6	1.3	1.1	1.0	1.0	1.2	1.3
Jordan	1.1	1.9	1.6	1.3	1.2	1.2	1.3	1.4
Korea	1.1	1.9	1.5	1.2	1.1	1.2	1.5	1.7
Scotland	0.9	1.5	1.3	1.0	0.9	1.0	1.1	1.3
Slovenia	0.9	1.4	1.3	1.1	0.9	1.0	1.1	1.3
Soviet Union	1.0	1.5	1.3	1.1	1.0	1.0	1.2	1.3
Spain	0.9	1.4	1.2	1.0	0.9	0.9	1.1	1.2
Switzerland	0.8	1.2	1.1	0.9	0.8	0.9	1.1	1.2
Taiwan	1.3	2.2	1.8	1.4	1.3	1.4	1.9	2.3
United States	1.2	2.1	1.7	1.3	1.2	1.2	1.5	1.7

Table 9bx: Standard errors for averages and percentile scores in Table 9b

	Average proficiency	Percentile score						
		5th	10th	25th	50th	75th	90th	95th
Alabama	1.7	4.2	1.9	1.8	2.0	1.7	2.0	2.8
Arizona	1.3	2.1	1.6	1.3	1.9	1.2	1.3	1.4
Arkansas	1.2	2.9	1.6	1.2	1.2	1.6	1.6	1.7
California	1.7	3.0	2.7	2.6	1.8	1.7	2.5	3.8
Colorado	1.1	2.8	1.6	1.2	1.1	1.2	1.2	1.2
Connecticut	1.1	3.3	2.6	1.7	0.8	1.0	1.4	2.4
Delaware	1.0	3.1	1.8	0.9	1.3	1.5	1.4	1.9
District of Columbia	0.9	1.7	1.0	1.2	1.8	2.8	1.7	3.4
Florida	1.5	2.0	3.0	1.6	2.0	1.7	2.0	1.4
Georgia	1.2	1.9	1.5	1.5	1.3	2.1	1.5	1.8
Hawaii	0.9	2.7	1.5	1.0	1.6	1.0	1.3	1.6
Idaho	0.8	2.1	1.1	0.9	1.2	0.8	1.1	1.8
Indiana	1.2	1.9	1.5	1.2	1.3	1.9	2.9	1.1
Iowa	1.0	1.1	2.1	1.4	1.1	1.5	1.6	2.6
Kentucky	1.1	3.3	1.7	1.6	1.0	1.3	2.8	1.8
Louisiana	1.7	2.8	2.6	2.2	1.6	2.0	1.8	2.1
Maine	1.0	1.8	2.3	1.2	1.1	1.7	1.3	2.6
Maryland	1.3	2.9	1.8	2.3	1.3	1.6	1.6	1.9
Massachusetts	1.1	2.4	1.4	2.2	2.0	1.6	1.7	2.3
Michigan	1.4	1.6	1.4	2.3	1.6	2.9	2.3	1.7
Minnesota	1.0	2.4	1.4	1.4	1.3	1.4	1.4	2.0
Mississippi	1.2	2.6	1.2	1.3	1.2	1.6	2.0	2.8
Missouri	1.2	1.8	2.9	1.8	1.4	1.6	1.3	2.2
Nebraska	1.1	1.8	1.7	1.2	1.4	1.0	1.6	3.5
New Hampshire	1.0	1.0	1.1	0.8	0.9	1.1	2.0	2.9
New Jersey	1.6	2.8	1.9	2.0	1.9	2.2	1.6	1.3
New Mexico	0.9	2.0	2.0	0.9	1.0	1.0	1.3	2.1
New York	2.1	6.5	3.1	2.8	1.8	1.4	2.4	1.5
North Carolina	1.2	3.1	2.6	1.3	1.2	1.4	1.5	2.5
North Dakota	1.2	2.3	1.2	1.4	1.0	1.4	1.7	1.2
Ohio	1.5	2.9	1.9	2.0	1.6	1.4	1.5	1.8
Oklahoma	1.2	3.6	1.3	1.4	1.1	1.4	1.5	1.8
Pennsylvania	1.5	2.2	2.3	1.5	1.4	1.1	1.8	1.8
Rhode Island	0.7	1.5	1.2	1.1	1.2	1.7	1.1	0.9
South Carolina	1.0	1.6	1.3	1.1	1.2	1.7	1.5	1.8
Tennessee	1.4	3.5	2.1	1.5	1.6	1.4	1.5	2.8
Texas	1.3	1.2	2.6	1.2	1.9	2.3	1.5	3.3
Utah	0.7	1.3	1.2	1.7	0.8	1.2	1.2	1.8
Virginia	1.2	1.8	1.5	1.7	1.7	1.6	1.5	1.9
West Virginia	1.0	2.7	1.5	1.0	1.7	1.1	1.8	1.8
Wisconsin	1.5	3.8	2.6	2.1	1.5	1.5	1.4	1.9
Wyoming	0.9	1.1	1.0	1.2	1.2	1.2	1.1	2.6

NOTE: The states of Alaska, Illinois, Kansas, Montana, Nevada, Oregon, South Dakota, Vermont, and Washington did not participate either year.

Table 11bx: Standard errors for Indicator 11

State	Total	Male	Female	Preprimary –lower secondary (11 or fewer yrs)	Upper secondary (12–13 yrs)	Higher education (non-university) (14–15 yrs)	Higher education (university) (16 or more yrs)
Alabama	1.01	1.32	1.57	1.18	1.08	0.61	0.72
Alaska	1.00	1.37	1.45	—	1.11	—	—
Arizona	0.89	1.26	1.20	1.45	0.74	0.83	0.69
Arkansas	1.10	1.51	1.58	1.49	0.99	0.94	0.82
California	0.39	0.50	0.62	0.52	0.41	0.33	0.32
Colorado	0.93	1.25	1.38	1.64	0.95	0.47	0.69
Connecticut	0.75	1.00	1.14	0.68	0.78	0.68	0.78
Delaware	0.61	1.00	0.50	—	0.64	—	—
District of Columbia	0.64	0.74	1.03	—	0.71	0.00	0.43
Florida	0.38	0.50	0.60	0.55	0.37	0.34	0.27
Georgia	0.78	1.05	1.18	1.06	0.71	0.91	0.45
Hawaii	0.62	0.73	1.05	—	0.50	0.81	0.64
Idaho	0.89	1.34	1.11	1.30	0.83	—	0.66
Illinois	0.49	0.63	0.77	0.73	0.46	0.52	0.33
Indiana	0.80	1.11	1.16	1.07	0.85	0.53	0.49
Iowa	0.68	0.91	1.01	0.81	0.76	0.42	0.42
Kansas	0.68	1.08	0.78	0.93	0.70	0.76	0.49
Kentucky	0.96	1.38	1.29	1.31	1.01	0.00	0.58
Louisiana	1.12	1.63	1.45	1.55	1.13	1.00	0.39
Maine	0.71	0.92	1.10	0.79	0.82	0.45	0.47
Maryland	0.77	1.12	1.03	0.66	0.84	0.85	0.67
Massachusetts	0.37	0.54	0.48	0.47	0.40	0.36	0.28
Michigan	0.50	0.75	0.61	0.80	0.50	0.34	0.29
Minnesota	0.74	1.11	0.94	0.62	0.82	0.45	0.68
Mississippi	1.03	1.36	1.57	1.36	1.00	0.85	0.76
Missouri	0.93	1.37	1.21	0.94	1.10	1.00	0.38
Montana	1.04	1.45	1.49	—	1.08	—	0.68
Nebraska	0.93	1.21	1.45	0.83	1.03	0.80	0.74
Nevada	0.81	1.30	0.80	1.17	0.81	0.63	0.58
New Hampshire	0.58	0.71	0.96	0.58	0.52	0.63	0.65
New Jersey	0.34	0.51	0.42	0.58	0.30	0.33	0.28
New Mexico	0.91	1.34	1.18	1.11	1.06	0.83	0.22
New York	0.39	0.54	0.55	0.47	0.44	0.36	0.27
North Carolina	0.33	0.41	0.52	0.42	0.33	0.30	0.24
North Dakota	0.72	1.19	0.59	—	0.79	—	0.33
Ohio	0.44	0.67	0.52	0.62	0.45	0.27	0.33
Oklahoma	0.97	1.20	1.56	1.58	0.91	0.66	0.58
Oregon	1.12	1.60	1.53	1.43	1.23	0.90	0.89
Pennsylvania	0.39	0.55	0.55	0.63	0.42	0.23	0.14
Rhode Island	0.86	1.18	1.27	0.85	0.81	—	0.88
South Carolina	0.59	0.87	0.78	0.84	0.59	0.64	0.00
South Dakota	0.60	0.80	0.90	—	0.61	—	—
Tennessee	0.76	1.13	0.97	0.94	0.77	0.54	0.59
Texas	0.47	0.63	0.72	0.64	0.45	0.48	0.36
Utah	0.92	1.15	1.51	—	1.11	0.80	0.53
Vermont	0.78	1.15	1.03	—	0.82	—	0.54
Virginia	0.65	0.84	1.01	0.96	0.73	0.00	0.44
Washington	0.87	1.11	1.39	1.33	0.86	0.78	0.78
West Virginia	1.12	1.58	1.47	1.32	1.22	—	0.00
Wisconsin	0.85	1.20	1.16	1.28	0.85	0.73	0.53
Wyoming	0.90	1.39	0.99	—	0.98	—	—

— Insufficient sample size.

Table 12bx: Standard errors for Indicator 12

State	Preprimary –primary	Lower secondary	Upper secondary	Higher education (non-university)	Higher education (university)
Alabama	1.26	1.44	1.93	1.21	1.29
Alaska	0.77	0.81	1.80	1.31	1.55
Arizona	1.00	1.05	1.82	1.31	1.55
Arkansas	1.11	1.33	1.83	1.06	1.35
California	0.56	0.49	0.87	0.65	0.81
Colorado	0.61	1.09	1.88	1.37	1.74
Connecticut	0.95	1.11	1.96	1.35	1.84
Delaware	0.70	1.14	1.87	1.28	1.53
District of Columbia	1.00	1.28	1.73	1.05	1.83
Florida	0.44	0.55	0.86	0.60	0.71
Georgia	0.93	1.23	1.67	1.06	1.33
Hawaii	0.76	0.87	1.82	1.28	1.62
Idaho	1.01	1.12	1.83	1.30	1.44
Illinois	0.51	0.59	0.97	0.65	0.83
Indiana	0.76	1.23	1.84	1.19	1.35
Iowa	0.69	0.82	1.77	1.08	1.46
Kansas	0.65	0.97	1.79	1.21	1.58
Kentucky	1.30	1.35	1.90	1.18	1.44
Louisiana	1.14	1.33	1.86	1.21	1.43
Maine	1.04	1.04	1.81	1.22	1.45
Maryland	0.85	1.09	1.83	1.20	1.69
Massachusetts	0.45	0.52	0.92	0.62	0.87
Michigan	0.43	0.63	0.95	0.61	0.75
Minnesota	0.69	0.88	1.85	1.22	1.59
Mississippi	1.23	1.27	1.84	1.21	1.41
Missouri	0.97	1.10	1.87	1.14	1.61
Montana	0.74	0.92	1.81	1.16	1.53
Nebraska	0.83	1.19	2.29	1.40	1.93
Nevada	0.66	1.10	1.82	1.34	1.38
New Hampshire	0.84	1.03	1.91	1.29	1.69
New Jersey	0.42	0.52	0.91	0.56	0.83
New Mexico	1.03	1.02	1.71	1.12	1.42
New York	0.48	0.52	0.87	0.58	0.77
North Carolina	0.52	0.63	0.91	0.57	0.74
North Dakota	0.84	0.72	1.73	1.25	1.50
Ohio	0.38	0.63	0.93	0.60	0.73
Oklahoma	0.96	1.11	1.81	1.20	1.42
Oregon	0.65	1.17	1.98	1.58	1.67
Pennsylvania	0.38	0.57	0.91	0.51	0.75
Rhode Island	1.12	1.30	1.97	1.15	1.65
South Carolina	0.92	1.17	1.64	1.01	1.27
South Dakota	0.78	0.80	1.59	1.04	1.31
Tennessee	1.25	1.18	1.77	0.99	1.36
Texas	0.59	0.54	0.91	0.63	0.79
Utah	0.47	0.97	1.90	1.47	1.67
Vermont	0.85	1.08	1.91	1.26	1.74
Virginia	0.92	0.98	1.55	1.01	1.47
Washington	0.48	0.91	1.80	1.35	1.58
West Virginia	1.15	1.27	1.88	0.97	1.27
Wisconsin	0.67	0.99	1.75	1.10	1.44
Wyoming	0.69	1.14	2.07	1.47	1.75

Note on international comparisons of current public education expenditures: Indicators 13 to 16

Definitions

Public education expenditures include funds channeled to both public and private schools by federal, state, and local governments, either directly or through students. This includes expenditures at public schools funded by public sources and subsidies to students at private schools from government agencies.

Current expenditures are expenditures for educational goods and services whose life span should not in principle exceed the current year (salaries of personnel, school books and other teaching materials, scholarships, minor repairs and maintenance to school buildings, administration, etc.). Current expenditures exclude both capital expenditures (construction of buildings, major repairs, major items of equipment, vehicles) and the servicing of debt.

Per pupil expenditures are calculated as current public expenditures divided by enrollment in both public and private schools. This is a measure of average public investment per student in the education system. it is not a measure of total resources a student receives, which would include private expenditures.

These indicators focus on the portion of current education expenditures at both public and private schools funded by public sources.

Expenditures in the United States

Elementary and Secondary

For the United States totals, current public expenditures for *elementary and secondary education* include current expenditures in local public school districts funded by state and local taxes, federal programs administered by the U.S. Department of Education (ED). Programs operated outside of ED that are not administered by state or local education agencies (e.g, Head Start, Department of Defense Schools, and schools operated by the Bureau of Indian Affairs) and expenditures to operate ED and other activities such as research, statistics, assessment, and school improvement used are included in the current public expenditure used in the international tables, but not in the state-level data.

Not available for inclusion were state expenditures to operate state departments of education and other direct state expenditures, including State schools for the deaf and blind and programs in correctional institutions. This exclusion produces an undercount of public expenditures that could reach $5 billion. Other countries may include these expenditures as "other" or "not distributed," so the undercount may not be a problem for the U.S. alone.

Higher Education

Current public expenditures for higher education in the United States includes expenditures at both public and private colleges and universities funded by federal, state, and local governments. Current expenditures by public and private non-profit institutions are separated into public and private expenditures based on the share of current fund revenues from federal, state, and local sources.

Most federal aid goes to students who then spend it on education (e.g., tuition) and non-education (room and board) services. It was assumed that 60 percent of federally administered Pell Grants were spent by students on education expenditures.

Total Expenditures on Education in 1988

Percentage of GDP

Country	Public sources	Private sources	Total
Canada	6.4	0.8	7.2
France	5.1	0.7	5.8
Germany	4.3	1.9	6.2
Italy	4.8	—	—
Japan	3.8	1.2	4.9
United Kingdom	4.7	—	—
United States	5.0	0.7	5.7

— Not available.

NOTE: *Total expenditures* include current expenditures, capital expenditures, and interest on debt.

SOURCE: Organization for Economic Co-operation and Development, *Education at a Glance: OECD Indicators*, 1992, table P1.

How Expenditures Are Compared Across Countries

To compare public expenditures per student in the United States with expenditures per student in other countries, expenditures must be denominated in a common currency.

Purchasing Power Parity (PPP) indices are calculated by comparing the cost of a fixed market basket of goods in each country. Changes over time in the PPP index are determined by the rates of inflation in each country. The PPP index is not volatile.[1]

PPP indices for Gross Domestic Product (GDP) have been used in these indicators.[2]

---

[1] For a further argument against using market exchange rates see Rasell, Edith M. and Lawrence Mishel, *Shortchanging Education*, Economic Policy Institute, January 1990.

[2] PPP indices for other aggregates such as private consumption expenditures are available. See Barro, Stephen M., *International Comparisons of Education Spending: Some Conceptual and Methodological Issues*, SMB Economic Research, Inc., April 1990, for a discussion of the strengths and weaknesses of using various indices.

Because the fiscal year has a different starting month in different countries, within-country consumer price indexes (CPI) calculated by the International Monetary Fund were used to adjust educational expenditures per-pupil data to allow for inflation between the starting month of the fiscal year and July 1, 1988.

GLOSSARY

GLOSSARY

Center for Educational Research and Innovation (CERI): An organization within OECD which promotes and conducts cooperative educational research activities among the OECD member nations.

Comprehensive schools: Schools offering a general curriculum rather than one intended to prepare students for specific occupations, types of higher education, or training. In most cases, students within a comprehensive school may choose courses that serve such a purpose, but comprehensive schools as a whole serve students with a variety of career and educational plans. (See *differentiated schools.*)

Confidence interval: An interval of values within which there is a specified probability that the true value lies. For example, in the case of a 95 percent confidence interval, there is a 95 percent probability that the true value lies within the interval.

Consumer price index (CPI): This price index measures the average change in the cost of a fixed market basket of goods and services purchased by consumers.

Current expenditures: Educational goods and services whose lifespan should not in theory exceed the current year, such as salaries of staff, educational supplies, scholarships, minor repairs and maintenance, and administration. Conventionally, minor items of equipment are treated as current expenditure even if the corresponding physical asset lasts longer than one year. Current expenditures exclude **capital expenditures**, which are for assets that will be used for many consecutive years, such as buildings, major repairs, major items of equipment, and vehicles, even if the financing of these assets is reported in a single financial year.

Differentiated schools: Schools offering a particular type of curriculum, such as college preparatory or vocational. For example, secondary school students in Germany enroll in differentiated schools including those that prepare them to enter apprenticeship programs or those that prepare them for a university education.

Educational attainment: The highest grade, year, or level of regular school attended and completed.

Educational expenditures: The sum of expenditures on instruction, research, public service, academic support, student services, institutional support, operation and maintenance of plant, and awards from restricted and unrestricted funds.

Enrollment reference group: The people in the age range typical for attendance in an educational level, starting at the typical starting age for that level and continuing through the typical years of duration, as identified by each country.

Full-time/Part-time enrollment: Students are enrolled full-time if they attend a program that is classified as such by the institution. Otherwise, they are considered part-time students. In the United States, higher education students are enrolled full-time if their total credit load is equal to at least 75 percent of the normal full-time course load. In some countries, no distinction is made between full-time and part-time students at certain levels.

Full-time-equivalent (FTE) enrollment: For institutions of higher education, enrollment of full-time students, plus the full-time equivalent of part-time students as reported by institutions. In the absence of an equivalent reported by an institution, the FTE enrollment is estimated by adding one-third of part-time enrollment to full-time enrollment.

G-7 countries: See *Group of Seven.*

Graduation reference age: The age identified by each country as the typical age at which students graduate. Used to construct graduation ratios.

GDP/GSP per capita: The GDP or GSP of a country or state divided by its total population.

Gross domestic product (GDP): The gross domestic product (GDP) is equal to the total of the gross expenditure on the final uses of the domestic supply of goods and services valued at price to the purchaser minus the imports of goods and services. The gross state product (GSP) is the analogous measure for states.

Gross state product (GSP): See *gross domestic product.*

Group of Seven (G-7): Seven industrialized nations with large economies: Canada, France, Italy, Japan, the United States, the United Kingdom, and West Germany. These countries are, coincidentally, all members of the OECD. However, the G-7 and the OECD are not related organizations.

Higher education: Study beyond secondary school at an institution that offers programs terminating in an associate, baccalaureate, or higher degree, or equivalent degrees in other countries.

Labor force: Persons aged 15 to 64 either employed or actively seeking work.

Lower secondary education: Education equivalent to grades 7, 8, and 9 in the United States.

National Assessment Governing Board (NAGB): The independent panel whose sole mission is to oversee the development and administration of the National Assessment of Educational Progress (NAEP).

National Education Goals: In the United States, the six national goals in education adopted by the President and the nation's governors in 1989.

Organization for Economic Co-operation and Development (OECD): An organization of 24 nations whose purpose is to promote trade and economic growth in both member and non-member nations. OECD's activities cover almost all aspects of economic and social policy. The member countries are: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States. Greece and

Iceland did not participate in the data compilation for ***Education at Glance***, therefore their data are not included in this report.

Part-time enrollment: See Full-time/Part-time enrollment.

Primary education: Education prior to secondary education, equivalent to elementary education in the United States.

Preprimary education: Preprimary education (public and private) may either be part-time or full-time and can cover young children participating in programs intended to foster learning and emotional and social development. Preprimary education is not compulsory in most countries. Day nurseries, child care centers, and similar institutions that predominantly provide custodial care are not included. In some countries, it is difficult to distinguish among the various programs.

Private expenditures: Expenditures funded by private sources — mainly households, private non-profit institutions, and firms and businesses. Private expenditures include school fees, materials such as textbooks and teaching equipment, transport to school (if organized by the school), meals (if provided by the school), boarding fees, and expenditure by employers for initial vocational training.

Private schools or institutions: Schools or institutions which are organized and controlled independently of public authorities, even though they may receive public funding.

Public expenditures: Expenditures funded by public authorities at all levels. Expenditures on education by public agencies other than education departments, ministries, or boards are included. Expenditures of education departments, ministries, or boards that are not directly related to education are generally not included.

Public schools or institutions: Schools or institutions organized and controlled by public authorities. They normally provide open access without any distinction of race, sex, or religion.

Purchasing Power Parity Index (PPPI): The rates of currency conversion that equalize the purchasing power of different currencies. This means that a given sum of money, when converted into different currencies at the PPPI rates, will buy the same basket of goods and services in all countries.

Standard error: An estimate of the error of an estimation due to sampling, based on the number of observations and their distances from their mean.

Unemployment rate: The percentage of the labor force without work and actively seeking work.

University: University education is defined here as education leading to a four-year undergraduate degree or graduate degree.

Upper secondary education: Education equivalent to grades 10, 11, and 12 in the United States. Upper secondary education may include general, technical, or vocational education.

SOURCES:

The McGraw-Hill Dictionary of Modern Economics, New York: McGraw-Hill, 1975.

Pearce, David W., *The Dictionary of Modern Economics*, Cambridge, Massachusetts: The MIT Press, 1981.

Shryock, H.S., and Siegel, J.S., *The Methods and Materials of Demography*, Washington, D.C.: U.S. Government Printing Office, 1975.

U.S. Department of Commerce, Bureau of the Census, *Current Population Reports*, Series P-20 "School Enrollment-Social and Economic Characteristics of Students: October 1988 and 1987."

U.S. Department of Education, National Center for Education Statistics, *Combined Glossary: Terms and Definitions From the Handbook of the State Educational Records and Reports Series*, Washington, D.C.: U.S. Government Printing Office, 1974.

SOURCES OF DATA

SOURCES OF DATA

International Data

Center for Educational Research and Innovation
Organization for Economic Cooperation and Development

International Indicators Project

The International Indicators Project was initiated in the late 1980s by the Center for Educational Research and Improvement (CERI) of the Organization for Economic Co-operation and Development (OECD) in response to the demand for comparative information on education in the OECD member nations. The project develops and reports on indicators of participation, attainment, and finance, learning outcomes, education and the labor market, the functioning of schools and school systems, and attitudes toward education. In 1992, CERI published the first edition of *Education at a Glance*, which contained 36 indicators. An updated and expanded edition will be published in late 1993, and subsequent volumes thereafter will be published on a regular basis.

The International Indicators Project relies on participating nations to report much of the data themselves. As the project is still in the beginning stages, some issues of uniformity of reporting procedures remain unresolved.

National Center for Education Statistics
U.S. Department of Education

National Science Foundation

International Assessment of Educational Progress

In 1990–91, as part of an international effort coordinated by the Educational Testing Service, a total of 20 countries assessed the mathematics and science achievement of 13-year-old students and 14 of the 20 countries assessed 9-year-old students in those same subjects. Some countries assessed virtually all age-eligible children in the appropriate age group; others confined their samples to certain geographic regions, language groups, or grade levels. The definition of populations often followed the structure of school systems, political divisions, and cultural distinctions. In some countries, significant proportions of age-eligible children were not represented because they did not attend school. Also, in some countries, low rates of school or student participation mean results may be biased.

Typically, a random sample of 3,300 students from about 110 different schools was selected from each population at each age level; half were assessed in mathematics and half in science. A total of about 175,000 9- and 13-year-olds (those born in calendar years 1981 and 1977, respectively) were tested in 13 different languages in March, 1991.

The achievement tests lasted one hour. The tests given to 9-year-olds included 62 questions in mathematics and 60 questions in science. Those for 13-year-olds included 76 questions in mathematics and 72 questions in science. In addition, students of each age spent about 10 minutes responding to questions about their backgrounds and home and school experiences. School administrators completed a school questionnaire.

Data on the States

National Center for Education Statistics
U.S. Department of Education

Common Core of Data

The National Center for Education Statistics (NCES) uses the Common Core of Data (CCD) survey to acquire and maintain statistical data on the 50 states, the District of Columbia, and the outlying areas from the universe of state-level education agencies. Information about staff and students is collected annually at the school, LEA (local education agency or school district), and state levels. Information about revenues and expenditures is also collected at the state level. Data are collected for a particular school year (July 1 through June 30) via survey instruments sent to the states by October 15 of the subsequent school year. States have two years in which to modify the data originally submitted.

Common Core of Data Finance Survey

The source of data for the elementary and secondary education finance data in this report is "The National Public Education Financial Survey" of the CCD series. The survey is one component of the Common Core of Data (CCD) surveys conducted annually by NCES, which provide basic descriptive information regarding the numbers of students and staff and the financing of public elementary and secondary schools. In compiling these fiscal data from administrative record systems, each state education agency (SEA) obtains data from the local education agencies (LEAs) that operate public schools. Each SEA may edit or examine the individual LEA reports before computing state totals. The reporting of fiscal data a year after the school year permits state administrative agencies to obtain audited fiscal LEA data.

Integrated Postsecondary Education Data System

The Integrated Postsecondary Education Data System (IPEDS) surveys all postsecondary institutions, including universities and colleges, as well as institutions offering technical and vocational education beyond the high school level. This survey, which began in 1986, replaces and supplements the Higher Education General Information Survey (HEGIS).

IPEDS consists of several integrated components that obtain information on where postsecondary education is available (institutions), who participates in it and completes it (students), what programs are offered and what programs are completed, and what human and financial resources are involved in the provision of institutionally-based postsecondary education. Specifically, these components include: institutional characteristics, including institutional activity, fall enrollment, including age and residence, fall enrollment in occupationally specific programs, completions, finance, staff, salaries of full-time instructional faculty, and academic libraries.

National Assessment of Educational Progress

The National Assessment of Educational Progress (NAEP) is a Congressionally mandated study funded by the Office of Educational Research and Improvement, U.S. Department of Education. The overall goal of the project is to determine the nation's progress in education. To accomplish this goal, a cross-sectional study was designed and initially implemented in 1969. Periodically, NAEP has gathered information about levels of educational achievement across the country. NAEP has surveyed the educational accomplishments of 9-,13-, and 17-year-old students (and in recent years, grades 4, 8, and 12), and occasionally young adults, in 10 learning areas. Different learning areas were assessed annually and, as of 1980–81, biennially. Most areas have been periodically reassessed in order to measure possible changes in education achievement.

Schools and Staffing Survey

Information on the school work force and teacher supply and demand are fundamental features of America's public and private school landscape. Yet, until recently, there has been a lack of data on characteristics of our children's teachers and administrators and their workplace conditions. The Schools and Staffing Survey (SASS) was designed to meet this need. This survey is a comprehensive public and private, elementary and secondary education database that combines and expands three separate surveys NCES has conducted in the past, including surveys of teacher demand and shortage, of public and private schools, and of public and private school teachers. The school administrator survey is a new addition to the NCES database.

Schools were the primary sampling unit for SASS, and a sample of teachers was selected in each school; public school districts were included in the sample when one or more of their schools was selected. The 1990-91 SASS included approximately 12,800 schools (9,300 public and 3,500 private), 65,000 teachers (52,000 public and 13,000 private), and 5,600 public school districts. The survey was conducted by mail, with telephone follow-ups.

The SASS sample has been designed to support the following types of estimates and comparisons: national and state estimates for public schools and teachers; estimates for private schools and teachers at the national level and for selected orientation groupings; and national comparisons of elementary, secondary, and combined schools and teachers. SASS was first conducted in the 1987–1988 school year. Data collection at two-year intervals began in 1990-91.

Bureau of the Census
U.S. Department of Commerce

Current Population Survey

Current estimates of school enrollment and social and economic characteristics of students are based on data collected in the Census Bureau's monthly household survey of about 60,000 households, the Current Population Survey (CPS). The CPS covers 729 sample areas consisting of 1,973 counties, independent cities, and minor civil divisions throughout the 50 states and the

District of Columbia. The current sample was selected from 1980 census files and is periodically updated to reflect new housing construction.

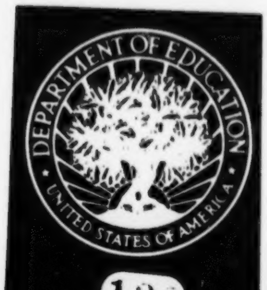
The primary function of the monthly CPS is to collect data on labor force participation of the civilian noninstitutional population. (It excludes military personnel and inmates of institutions.) In October of each year, questions on school enrollment by grade and other school characteristics are asked about each member of the household.

From the data collected on the CPS, various series of reports are published. One report used extensively in this publication is the Current Population Report Series P-25, No. 1058, State Population and Household Estimates.

Educational Attainment. Data on years of school completed are derived from two questions on the CPS instrument. Biennial reports documenting educational attainment are produced by the Bureau of the Census using March CPS data. The latest report is *Current Population Reports*, Series P-20, No. 451 *Educational Attainment in the United States, March 1989 and 1988.*

INDEX

Area, 18, 20, 21
Completion, 7, 8, 58–61, 66–69
Comprehensive schools, 42, 118
Current expenditure, 72–87, 118
Current public education expenditure, 72–83
Degree of comprehensiveness, 42
Differentiated schools, 42, 118
Educational attainment, 7, 8, 64–69, 118, 127
Educational expenditure, 9-11, 72–87, 118
Formal education participation, 6, 7, 36–51
FTE (full time equivalent), 36, 38, 39, 46, 47, 50, 51, 119
Full-time enrollment, 36, 41, 42, 43, 46, 47, 50, 51, 118
GDP (gross domestic product), 9, 10, 26, 27, 28, 72–74, 84–86, 119
GSP (gross state product), 9, 10, 26, 27, 29, 72, 73, 75, 84, 87, 119
G-7 countries, 5, 9, 10, 30, 36, 48, 66, 76, 84, 119
Higher education, 44–51, 62–69, 73–87, 119
IAEP (International Assessment of Educational Progress), 54, 56, 57, 93–96, 124
In-migrant students, 48, 58
Labor force participation, 5, 6, 30, 31, 32, 33, 119
Levels of education, 6, 7, (see *Educational attainment*)
Mathematics achievement, 3, 7, 8, 54–57
Mathematics achievement levels, 54–57, 93–95
NAEP (National Assessment of Educational Progress), 4, 54–57, 93–95, 119, 126
Non-university higher education, 7, 44–47
Out-migrant students, 48, 58
PPPI (Purchasing power parity index), 28, 82, 99, 117, 120
Part-time enrollment, 38, 39, 46, 47, 50, 51, 120
Per-student expenditure, 80–87
Population, 5, 6, 16, 19, 25, 37–43, 45, 46, 49–51, 59, 61, 67–69, 126
Population density, 5, 16, 17, 20, 21
Preprimary through secondary education, 32, 36, 38, 39, 62–69, 73–87
Private education expenditure, 120
Public education expenditure, 9, 10, 72–75, 77–81, 83, 85–87, 120
Secondary education, 6, 40–43, 64–69
Sex (Gender), 7, 24, 25, 32, 33, 46, 47, 50, 57, 60, 61, 64, 65
Theoretical age group, 42, 46, 47, 50, 60, 61
Theoretical duration, 40, 42, 46, 50
Unemployment, 6, 30–33, 120
University education participation, 48–51, 120
Upper secondary enrollment, 40–43, 120
Undistributed expenditures, 73, 74, 78
Vocational training, 40, 44


DEPARTMENT OF EDUCATION
UNITED STATES OF AMERICA